

ORDER NO. ARP2390

MULTI - PLAY COMPACT DISC PLAYER

Туре	Power Requirement	Remarks
AUC		
AD	AC power supplied from power transformer's secondary of	
ABXJS	other system component	
AEMXJS		

- This manual is applicable to PD-P920M/AUC, AD, ABXJS and AEMXJS.
- For AD, ABXJS and AEMXJS types, refer to page 70.
- This product is a component of systems.

 For the system composition, refer to the system manuals.
- This product dose not function properly when independent; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result.
- Ce manuel pour le service comprend les explications de réglage en français.
- Este manual de servicio trata del método ajuste escrito en español.

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This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1. SAFETY INFORMATION

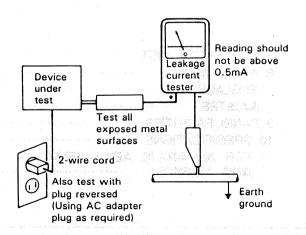
-(FOR USA MODEL ONLY)-

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a Δ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VARO!

AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

-ADVERSEL: -

USYNLIG LASERSTRÅLING VED ÄBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

- VARNING! -

OSYNLIG LASERSTRÄLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.



LASER Kuva 1 Lasersateilyn varoitusmerkki WARNING! -

DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.



LASER
Picture 1
Warning sign for laser radiation

-IMPORTANT -

THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LABEL CHECK (MULTI MAGAZINE type)

AEMXJS type

VARO!

Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Ålä katso säteeseen. VARNING!

Osynlig laserstrålning när denna del är oppnad och spärren är urkopplad. Betrakta ej strålen. PRWI233

AEMXJS type

ADVARSEL USYNLIG LASERSTRÅLING VED ÄRNING NÅR SIKKERHED SAF-BRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

VORSICHT!
UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL
(ODER KLAPPE) GEÖFFMET IST! NICHT DEM STRAHL AUSSETZEN

ABXJS type

CAUTION
INVISIBLE LASER
RADIATION WHEN OPEN,
AVOID EXPOSURE
TO BEAM PRW1018

1

AEMXJS type, ABXJS types

AEMXJS type, ABXJS types

CLASS 1 LASER PRODUCT Additional Laser Caution

1. Laser Interlock Mechanism

The ON/OFF (ON: low level, OFF: high level) status of the LPS1 (S601) and LPS2 (S602) switches for detecting the loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when both switches LPS1 and LPS2 are not ON (low level)(clamped state).

Thus, interlock will no longer function if switches LPS1 (S601) and LPS2 (S602) are deliberately shorted.

Also, in the test mode *, the interlock mechanism does not operate too.

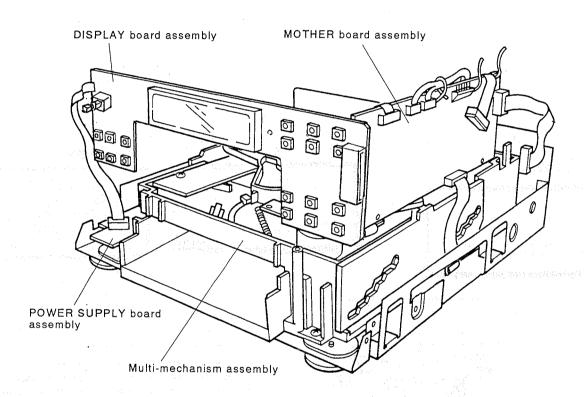
Laser diode oscillation will continue if pins 2 and 3 of CXA1471S (IC101) are connected to ground or pin 20 is connected to high level (ON) or the terminals of Q101 are shorted to each other (fault condition).

- When the cover is opened with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.
- *: Refer to page 30.

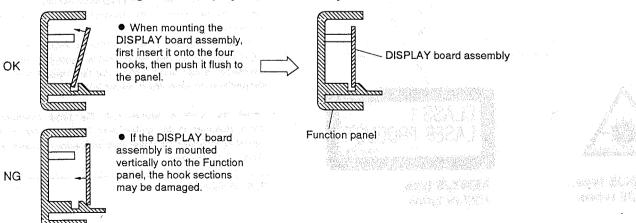


2. HOW TO DIAGNOSE THE MOTHER AND DISPLAY BOARD ASSEMBLIES

- 1. Remove five screws to remove the bonnet.
- 2. Remove two screws at the under side of the front panel.
- 3. Pull out the front panel section from the unit.
- 4. Remove three screws to remove the DISPLAY board assembly and the front panel.



Notes on mounting of the Display board assembly





3. PACKING

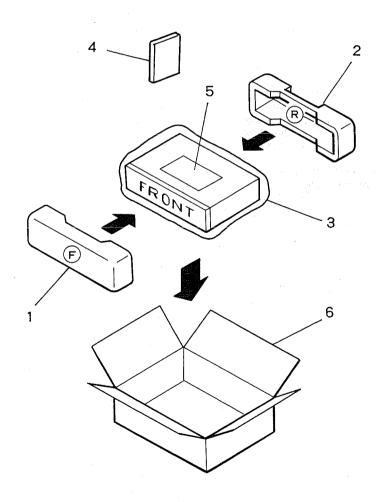
NOTES:

- The parts with an encircled number are generally unavailable because they are not in our Master Spare Parts List.
- The A mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- be sure to use parts of identical designation.

 Parts marked by "®" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

<u>Mark</u>	No.	Description	Part No.
	1	Protector F	PHA1182
	2	Protector R	PHA1183
	3	Mirror mat sheet	Z23-026
	4	Magazine assembly	PXA1308
	5	Operating instructions (English, French)	PRE1158
	6	Packing case	PHG1802





4.EXPLODED VIEWS AND PARTS LIST

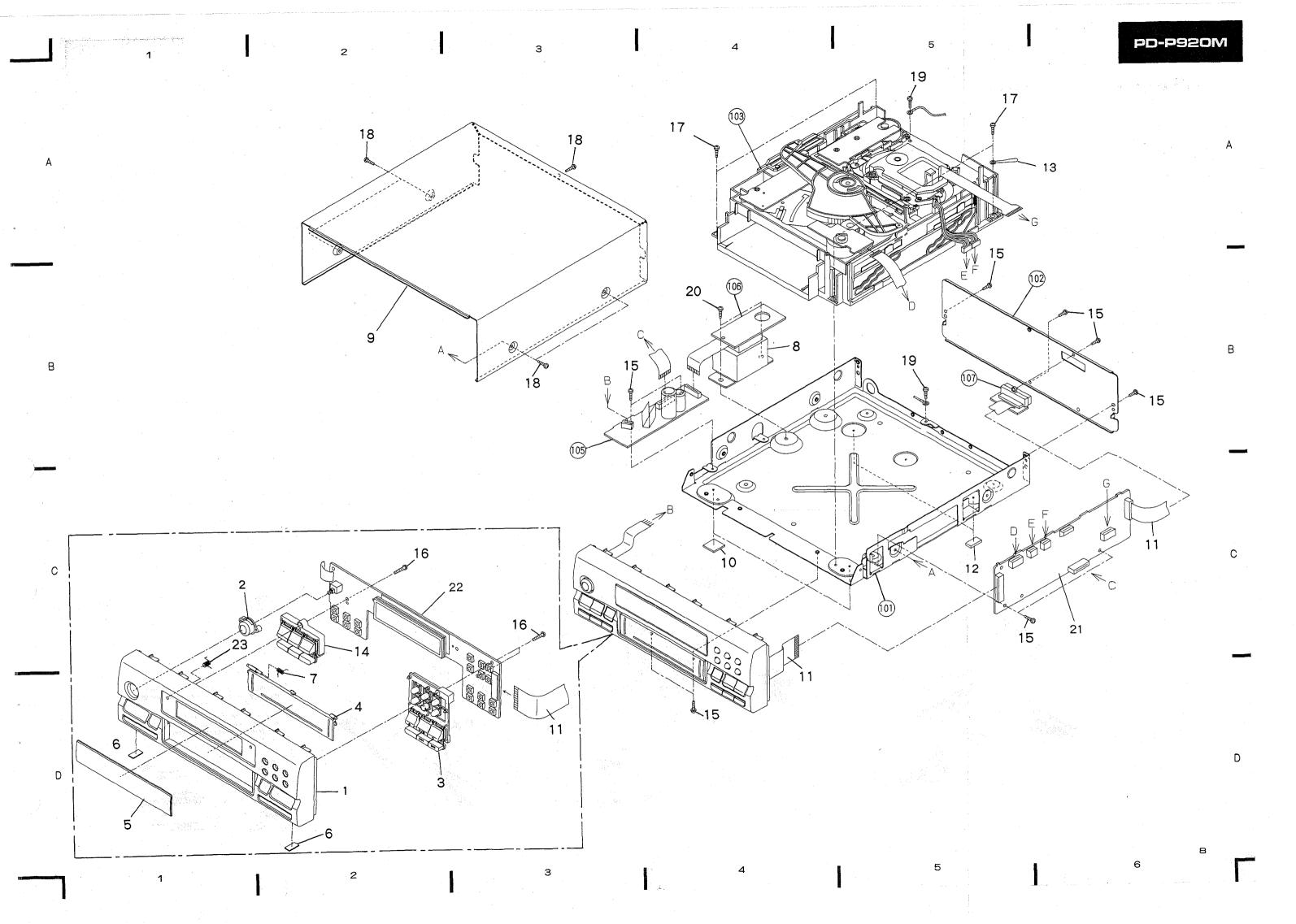
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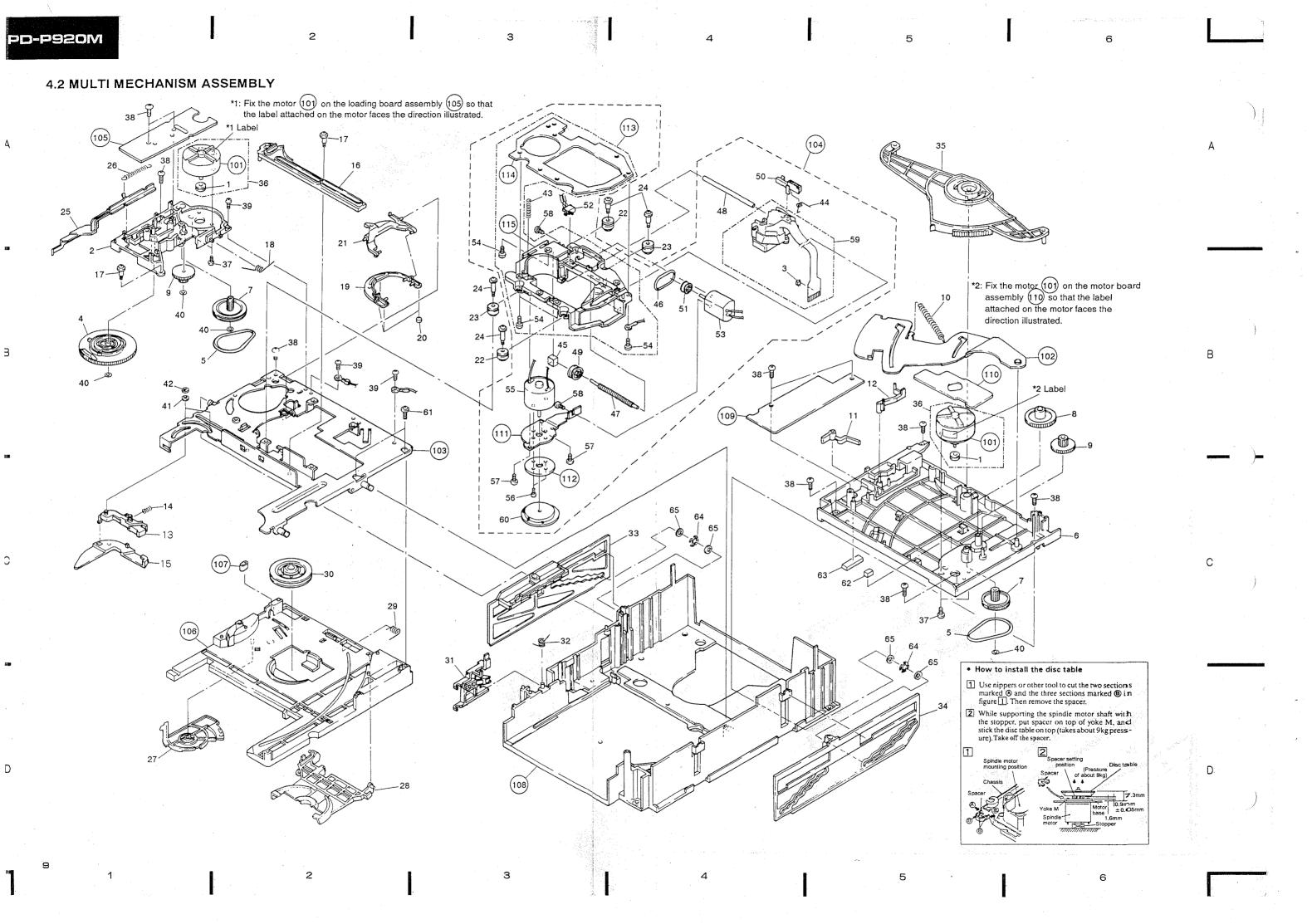
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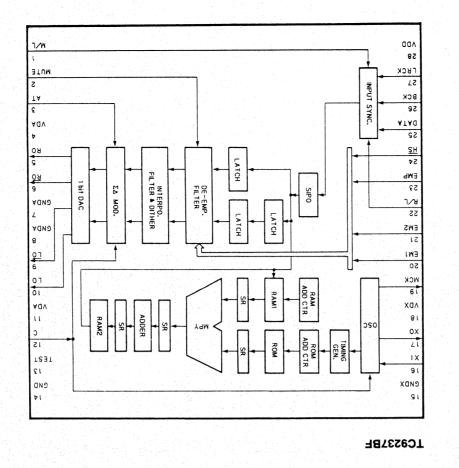
4.1 EXTERIOR

Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Function panel	PNW2083		101	Under base	PNA1582
	2	Power button	PAC1606		102	Rear base	PNA1755
	3	Function button	PAC1613		103	Multi mechanism assembly	PXA1358
	4	Door	PNW2101		104		
	5	Display window	PAM1537		105	POWER SUPPLY board assembly	PWZ2198
	6	Stopper	AEB1111			•	
	7	Door spring	PBH1022		106	TRANSFORMER board	PWZ2246
\triangle	8	Power transformer	PTT1239			assembly	
	9	Bonnet	PNA1715		107	CONNECTOR board	PWZ2249
	10	Spacer	PEB1206			assembly	
	11	Connection cable	PDD1114				
	12	Cushion	PEB1207				
	13	Cord clamper	RNH-184				
	14	Mode button	PAC1614				
	15	Screw	BBZ30P060FZK				
	16	Screw	PPZ30P120FMC				
	17	Screw	BBZ30P080FMC				
,	18	Screw	BDZ30P060FZK				
	19	Screw	PDZ30P050FMC				
	20	Screw	PSA40P060FMC				
(a)	21	MOTHER board assembly	PWM1640				
Ō	22	FUNCTION board assembly					
	23	Earth spring	PBH1143				

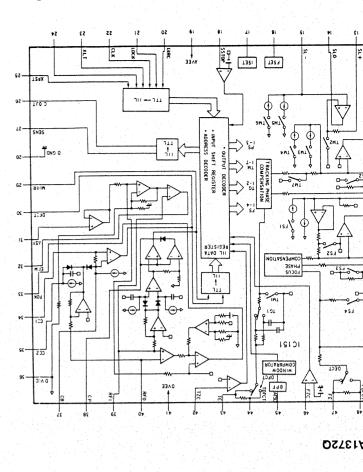






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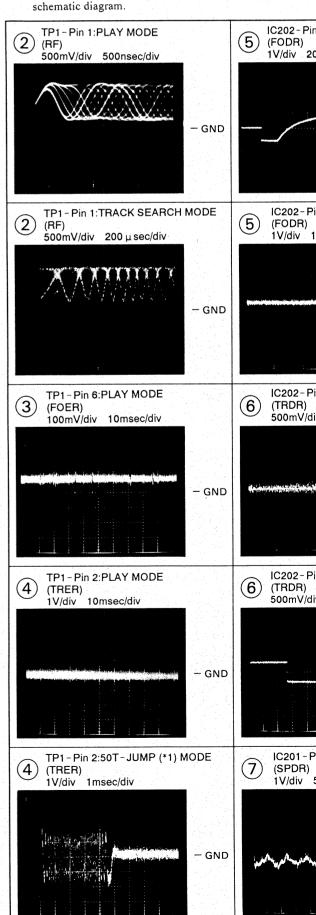
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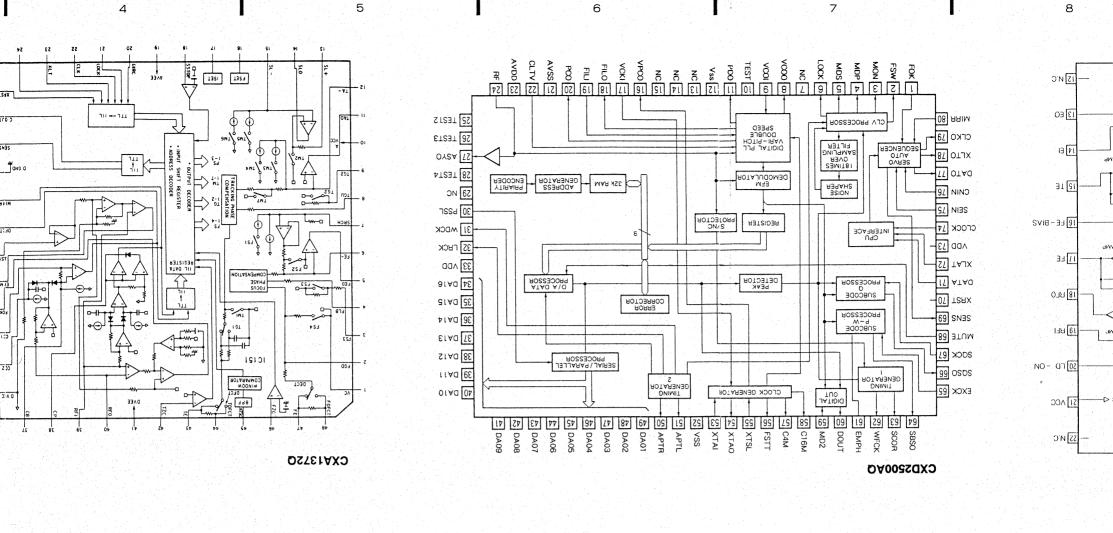
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Motor pulley	PNW1634		46	Belt	PEB1072
	2		PNW1929		47	Drive screw	PLA1003
	3		PCP1008		48	Guide bar	PLA1071
		Committee Transfer (Transfer)	PNW1923		49	Pulley	PNW1066
	4		PEB1138		50	Half nut	PNW1605
	5	Belt	FEBI136		50	Trail nut	114 W 1005
	6	Top guide	PNW1914		51	D 1 1/1 (INTOURING	D001014
	7	Gear pulley	PNW1918		52	Push switch (INSIDE)	DSG1014
	8	Gear S	PNW1919		53	D.C.motor (CARRIAGE)	PXM1013
	9	Gear L	PNW1920		54	Screw	PBZ30P080FM0
	10	Eject spring	PBH1107		55	D.C.motor assembly (with oil)(SPINDLE)	PEA1028
	11	Switch lever	PNW1927			크림에 걸음하다 내 전력하다	
	12	Seven bar	PNW1931		56	Screw	JFZ20P040FMC
	13	Sub rotary lever	PNW1933		57	Screw	BPZ20P080FZK
	14	Sub rotary lever spring	PBH1111		58	Screw	PMZ20P030FM
	15	Rotary lever	PNW1932		59	Pickup assembly	PEA1030
	13	Rotally level			60	Disc table assembly	PEA1035
	16	Drive plate	PNW1930		1983		
	17	Motor screw	PBA-112		61	Screw	IPZ30P080FMC
	18	Holder lever spring	PBH1110		62	Rubber spacer	PEB1178
	19	Disc holder	PNW1924		63	Rubber spacer	PEB1179
	20	Cushion A	PED1001		64	Silent ring	PBK1093
	20	Cusinon A	LEDIOOI		65	Washer	WA62D130D02
	21	Holder lever	PNW1925				
	22	Float rubber	PEB1014				
	23	Float rubber	PEB1132				
	24	Float screw	PBA1055		101	Motor	VXM1033
	25	Release lever	PNW1934		102	Eject lever	PNB1306
					103	Upper chassis	PNB1267
	26	Release spring	PBH1106		104	Servo mechanism assembly	PXA1364
	27	Clamper cam	PNW1922			M	
	28	Clamper holder	PNW1921		105	Loading board assembly	PWZ2038
	29	Clamper spring	PBH1109		103	Boading board assembly	F W Z.2036
			PNW1857		106	Sub chassis	DNILVOOOT
	30	Clamper	FINW 1837				PNW2027
	<u> </u>		DNIW1017		107	Rubber tube	PEB1171
	31	Lock lever	PNW1917		108	Main chassis	PNW2026
	32	Lock spring	PBH1108		109	Select board assembly	PWZ2039
	33	Stair L	PNW1915		110	Motor board assembly	PWZ2040
	34	Stair R	PNW1916		see Ein	그 그들이 많아서는 이번에 이 이름들이	
	35	Synchronize lever	PNW1926		111	Motor base	PNB1211
		하님들의 사회 하고 있는데 없는데 하셨다.			112	Yoke M	PNB1227
	36	Motor assembly	PEA1130		113	Mechanism base assembly T	PXA1294
		(LOADING, DISC SELECT)			114		PNB1230
	37	Screw	PMZ26P040FMC		115	Mechanism chassis	PNW1604
	38	Screw	PPZ30P080FMC				
	39	Screw	BBZ30P060FMC				
	40	Washer	WT26D047D025				
	41	Washer	WA31D054D025				
		E ring	Z39-010				
	42		PBH1009				
	43	Earth spring					
	44	Drive spring	PBH1084				
	45	Plate spring	PBK1057				

5. SCHEMATIC DIAGRAM

5.1 WAVE FORMS

Note: The encircled numbers denote measuring in the



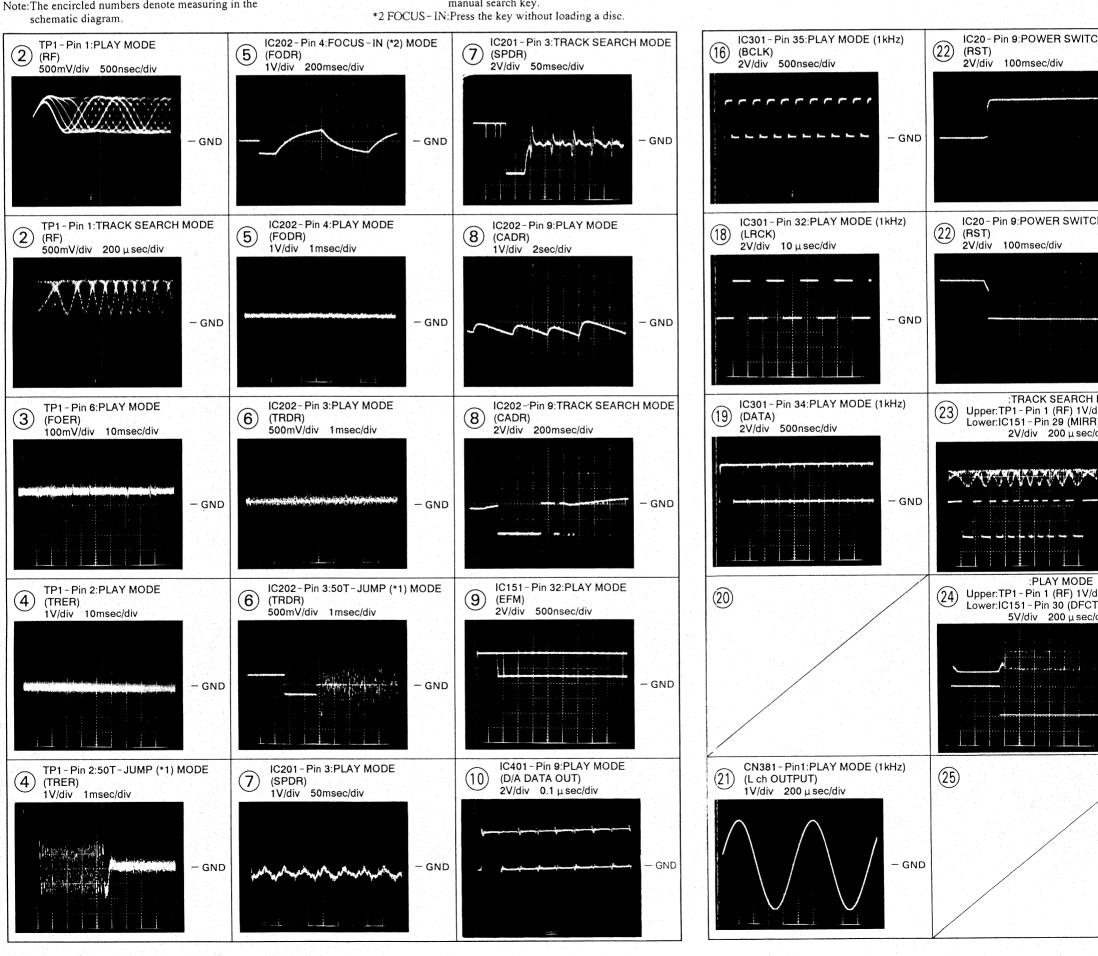


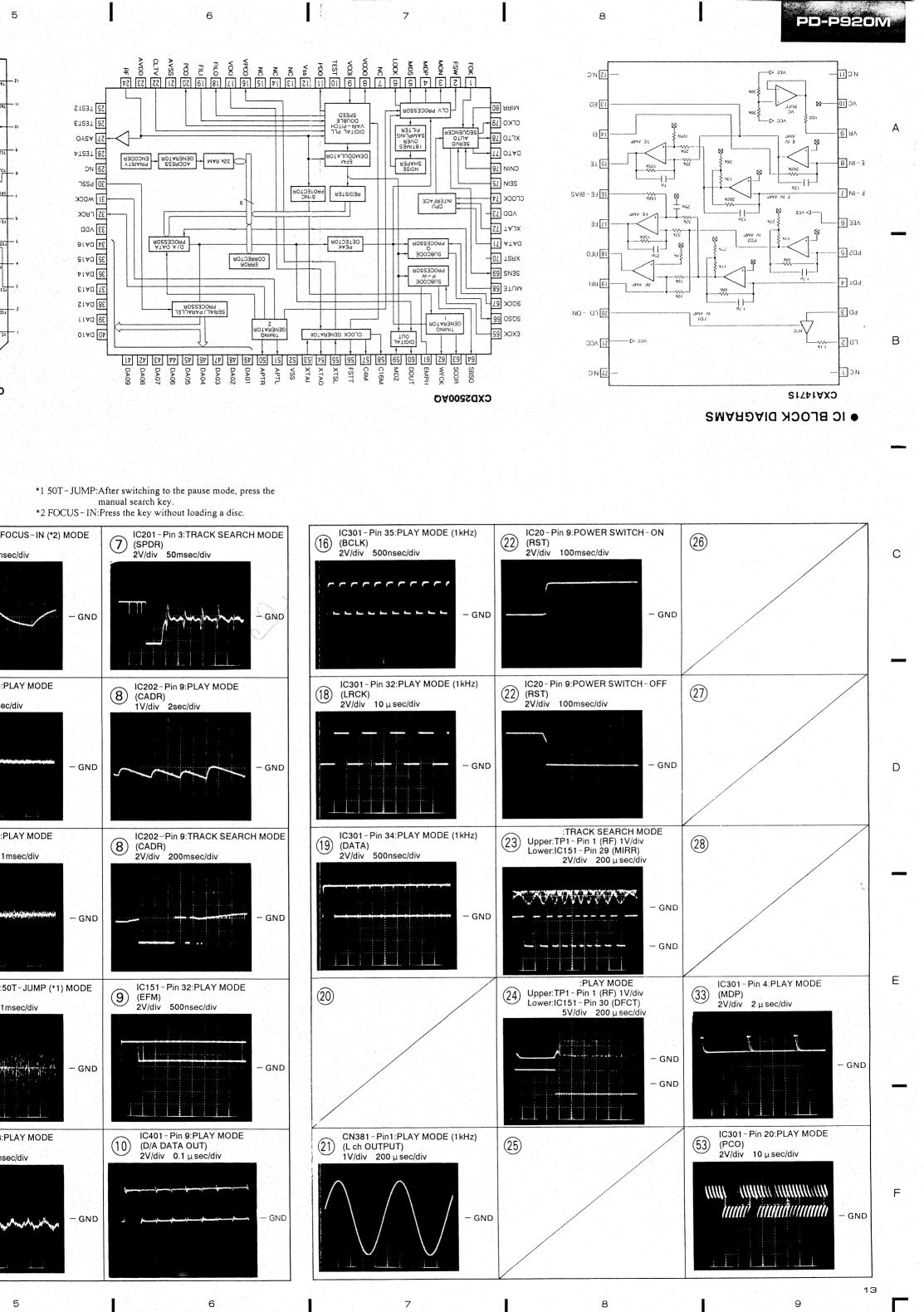
5. SCHEMATIC DIAGRAM

5.1 WAVE FORMS

Note: The encircled numbers denote measuring in the

*1 50T - JUMP: After switching to the pause mode, press the manual search key.





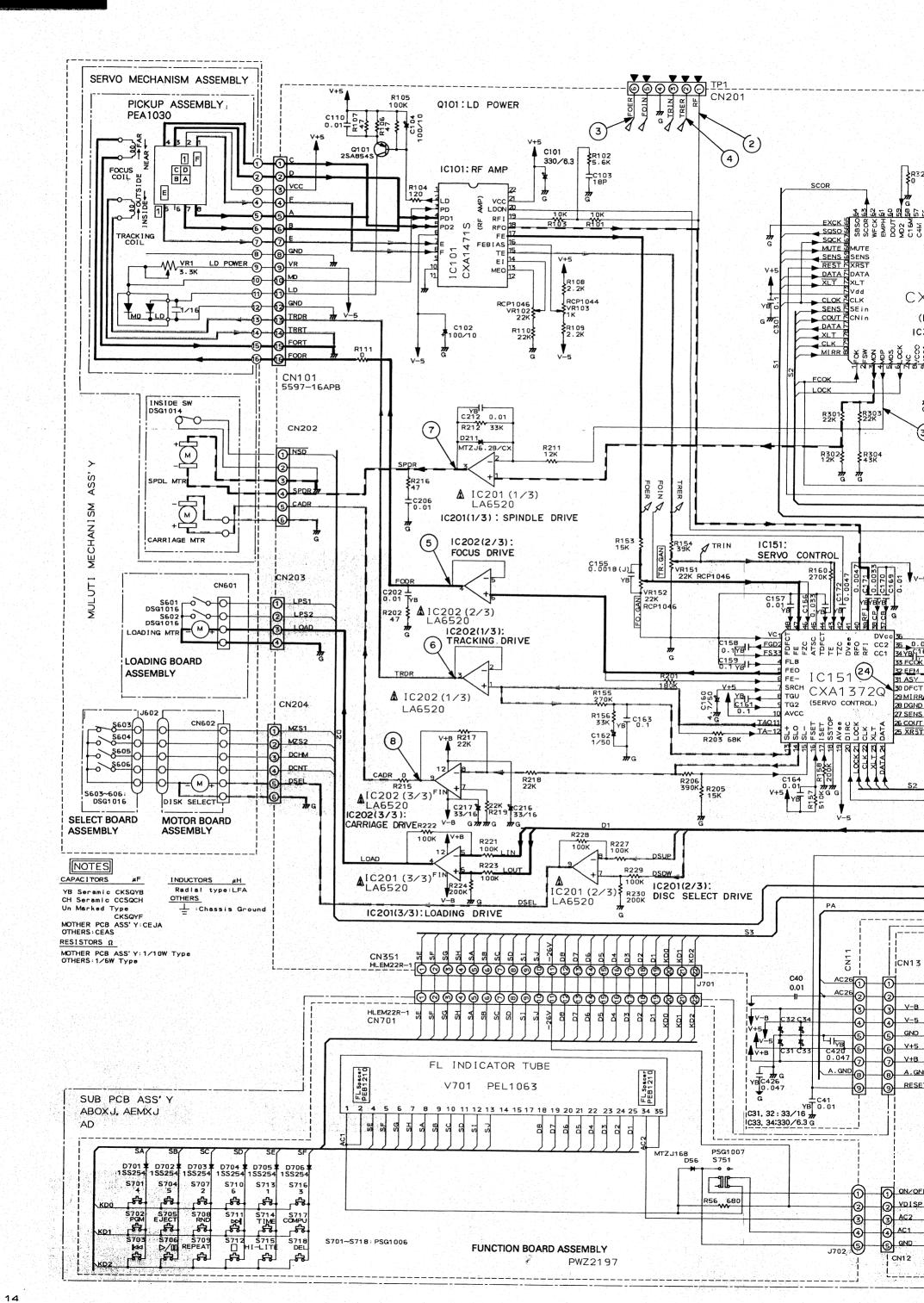
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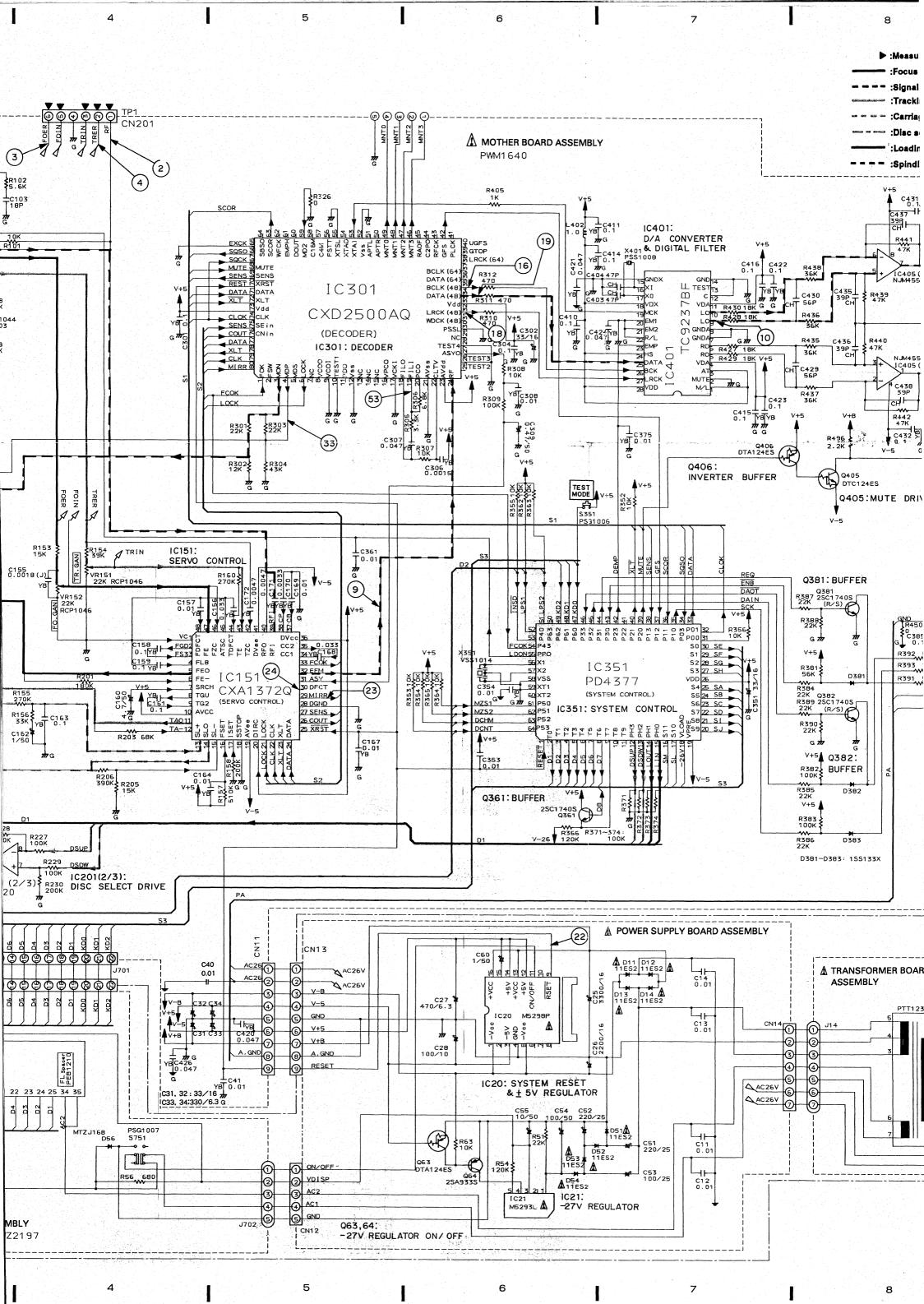


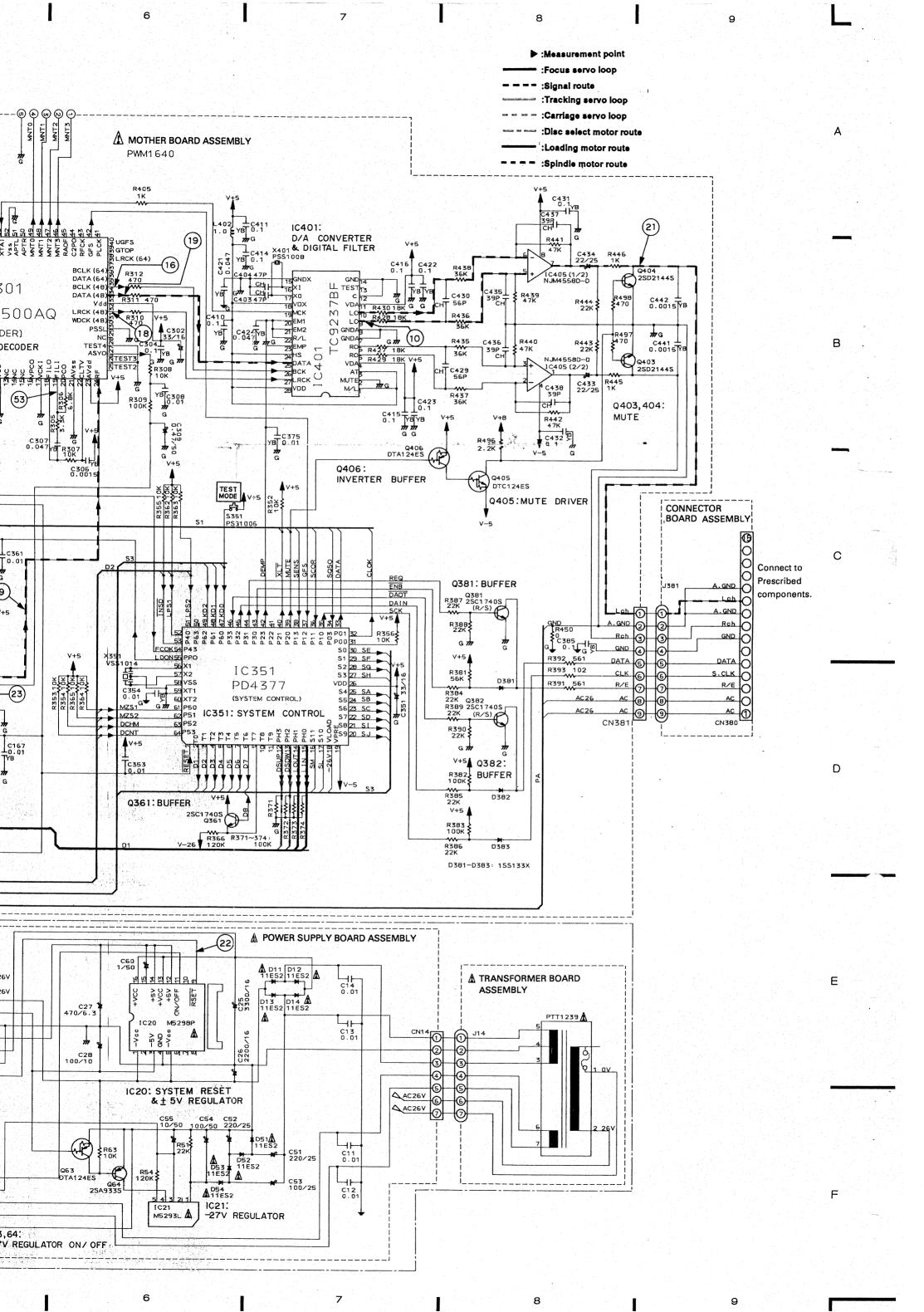
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1. RESISTORS:

Indicated in Ω , 1/4W, 1/6W, 1/8W and 1/10W, \pm 5% tolerance unless otherwise noted k; k Ω , M; M Ω , (F); \pm 1%, (G); \pm 2%, (K); \pm 10%, (M); \pm 20% tolerance.

2. CAPACITORS:

Indicated in capacity (μ F) /voltage (V) unless otherwise noted p pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:

;DC voltage (V) at play state.

← mA ;DC current at play state.

;Value in () is DC current at stop state.

4. OTHERS:

⇒; Signal route.

⊘; Adjusting point.

The \(\triangle \) mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

* marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

Terminal Voltages

IC151 (CXA13720)

(CXA1372Q)					
Pin No.	Voltage	Pin No.	Voltage		
[]	0	25	5		
2	0	26	0		
3	0	27	. 5		
4	0	28	0		
5	0. 2	29	0		
6	0	30	N. C.		
7	0. 2	31	2. 5		
8	0	32	2. 5		
9	0	33	5		
10	5	34	-1.5		
11	0	35	-1.7		
12	0	36	5		
13	0	37	-0.7		
14	0.2-0.8	38	-1.6		
15	0	39	0		
16	-4	40	0.8		
-17	1.3	41	-5		
18	0	42	. 0		
19	-5	43	0		
20	5	44	0		
21	5	45	0		
22	. 5	48	0		
23	5	47	0		
24	5	48	0		

IC20 (M5298P

/M5	(M5298P)					
Pin No.	Voltage	Pin No.	Voltage			
	-8. 7	9	5			
2	N. C.	10	N. C.			
3	-5	11	0.6			
4	0.2	12	. 5			
5	-8. 7	13	8. 2			
6	-6. 9	14	5			
7	N. C.	15	1. 2			
8	N. C.	16	8. 2			

IC301

	(CXD2500AQ)					
Pin No.	Voltage	Pin No.	voitage			
1.	5	41	N. C.			
2	N. C.	42	5			
3	5	43	N. C.			
4	2, 6	44	N. C.			
5	N. C.	45	N. C.			
6	5	46	4. 4			
7	N. C.	47	0			
8	N, C.	48	0			
9	0	49	0 - 0.3			
10	0	50	N. C.			
11	N. C.	51	N. C.			
12	0	52	0			
13	N. C.	53	2. 5			
14	N. C.	54	N. C.			
15	N. C.	55	0			
16	N. C.	56	N. C.			
17	0	57	N. C.			
18	2. 5	58	N. C.			
19	2. 4	59	0 .			
20	2. 4	60	N. C.			
21	0	61	N. C.			
22	2. 5	62	N. C.			
23	5_	63	0			
24	2. 5	64	N. C.			
25	N. C.	65	_0			
26	0	66	3.3 -4.6			
27	2. 5	67	5			
28	0	68	0			
29	N. C.	69	2.1 -3			
30	. 0	70	5			
31	N. C.	71:	5			
32	2. 5	72	5			
33	5	73	5			
34	2. 5	74	5			
35	2. 5	75	5			
36	N. C.	76	0			
37	N. C.	77	5			
38	N. C.	78	5			
39	N. C.	79	5			
40	N. C.	80	- 0			

5. SWITCHES: (The underlined indicates the switch position)

DISPLAY BOARD ASSEMBLY

S701:4

S702: PROGRAM

\$703 : SEARCH (

S704:5

S705 : EJECT (△)

\$706 : PLAY / PAUSE (▷ / []])

S707:2

S708: RANDOM PLAY

S709 : REPEAT

S710:6

\$711 : SEARCH (▷▷/ ▷▷)

S712: STOP (□)

S713:1

S714: TIME

S715: HILITE SCAN

S716:3

S717: COMPU PGM

S718 : DELETE

.. \$751 : POWER

LOADING BOARD ASSEMBLY

S601: LPS1 LOADING POSITION

S602: LPS2

SELECT BOARD ASSEMBLY

S603: MZS1 MAGAZINE

S604: MZS2

S605: DCHM DISC POSITION

S606: DCNT

IC351

,							
	(PD4377A)						
Pin No.	Voltage	Pin No.	Voltage				
1	5	33	5				
2	-23	34	3.8				
3	-23	35	4.8				
4	-23	36	0				
5	-23	37	5				
6	-23	38	1.2				
7	-23	39	0				
8	-23	40	5				
9	-23	41	N. C.				
10	N. C.	42	0				
11	N. C.	43	a. 11 (11 5				
12	0	44	0				
13	0	45	5				
14	0	46	0				
15	0	47	0				
16	0.5	48	0				
.17	1.9	49	0				
18	-27	50	0				
19	-5	51	*** : 1.10				
20,	0.8	52	0				
21	0.4	53	- 5				
22	- 8	54	ą/./ 5				
23	1.0	55	5				
24	-4	56	2. 2				
25	0	57	2. 2				
26	5	58	0				
27	0	59	0				
28	0	60	N. C.				
29	0	61	0				
30	- 8	62	0				
31	5	63	10				

IC101 (CXA1471S)

Pin No.	Voltage	Pin No.	Voltage
1	N. C.	12	N. C.
2	2. 9	13	-0.9
3	-4. 7	14	-0.7
4	0	15	0
5	0	16	0
6	~5	17	0
7	0	18	0.8
8	0	19	0
9	N. C.	20	5
10	0	21	5
11	N. C.	22	N. C.

IC401 (TC9237B)

	(TC9237BF)							
	Pin No.	Voltage	Pin No.	Voltage				
	1	5	15	0				
	2	0	16	1.9				
	3	5	17	1.9				
1	4	5, 5	-18	5				
	5	2. 5	19	2				
ĺ	6	2.5	20	. 0				
1	7	0	21	0				
	8	0	22	0				
	9	2.5	23	0				
	10	2. 5	24	5				
	11	5	25	2.5				
	12	0	26	2.5				
	13	N. C.	27	2.5				
ı	14	0	28	5				



6. P.C.BOARDS CONNECTION DIAGRAM

P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
	or E	Transistor	· _ ·		Ceramic capacitor
D S G	or Çü	FET	$\subset \supset$	0	Mylar capacitor
ОM			\$()		Styrol capacitor
<u></u>	○	Diode	NP	○ - ○	Electrolytic capacitor (Non polarized)
			Z Z		Electrolytic capacitor (Noiseless)
aj		7		o—₩ ⁺ —∘	Electrolytic capacitor (Polarized)
Œ		Zenner diode			Electrolytic capacitor (Polarized)
14	<u>~_</u> ₹	LED		0	Power capacitor
	○ — ←	Varactor		·	Semi-fixed resistor
1 🗆 1	П	_			Resistor array
0	0 0	Tact switch			
~			~	○	Resistor
		Inductor		gradien in der Agradien von der Schalen Station	
	~~~	Coil	<b>-0-</b>		Resonator
,    2  1		Transformer		·	Thermistor
8		Filter			

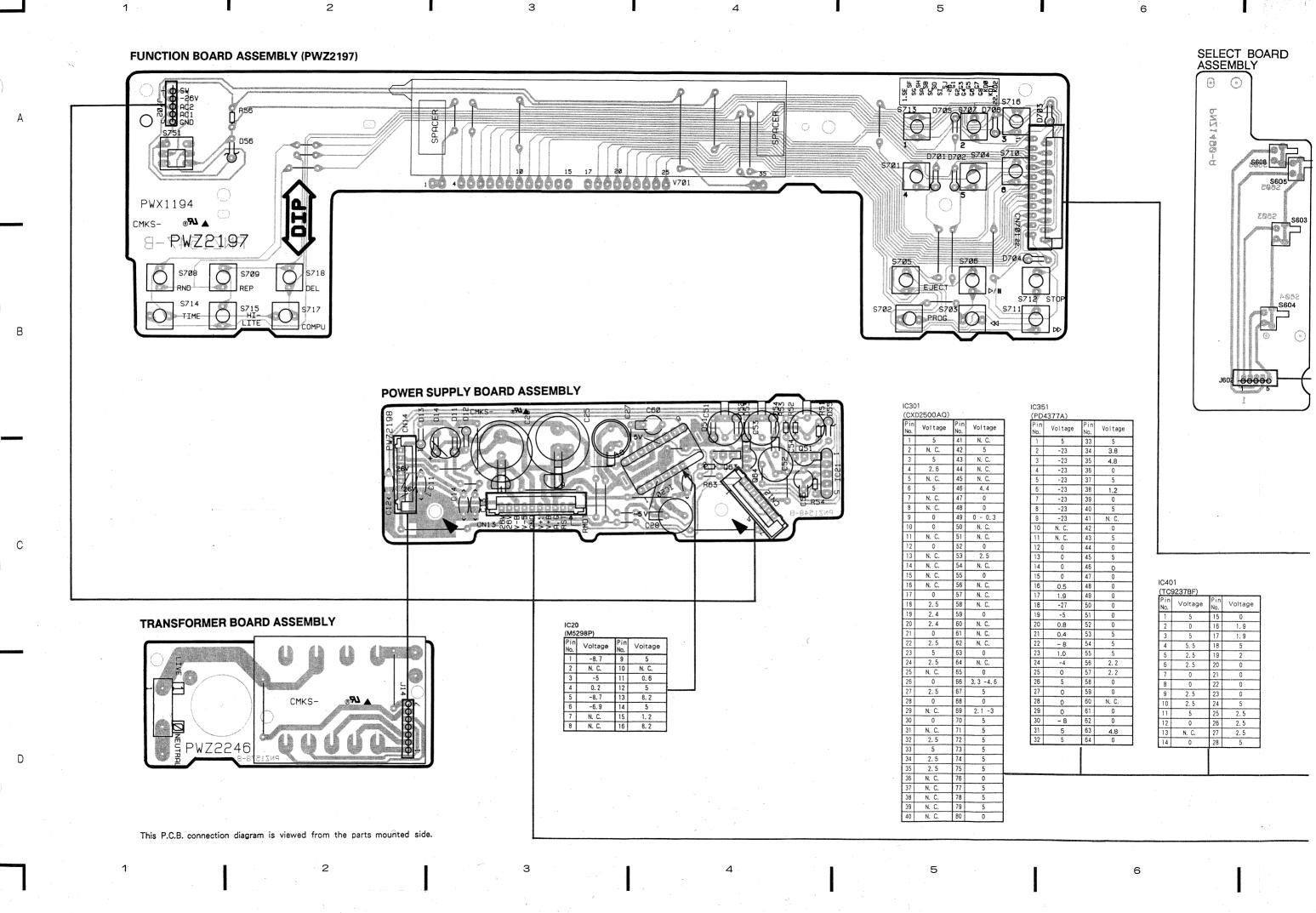
^{1.} This P.C.B. connection diagram is viewed from the parts mounted side.

^{2.} The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.

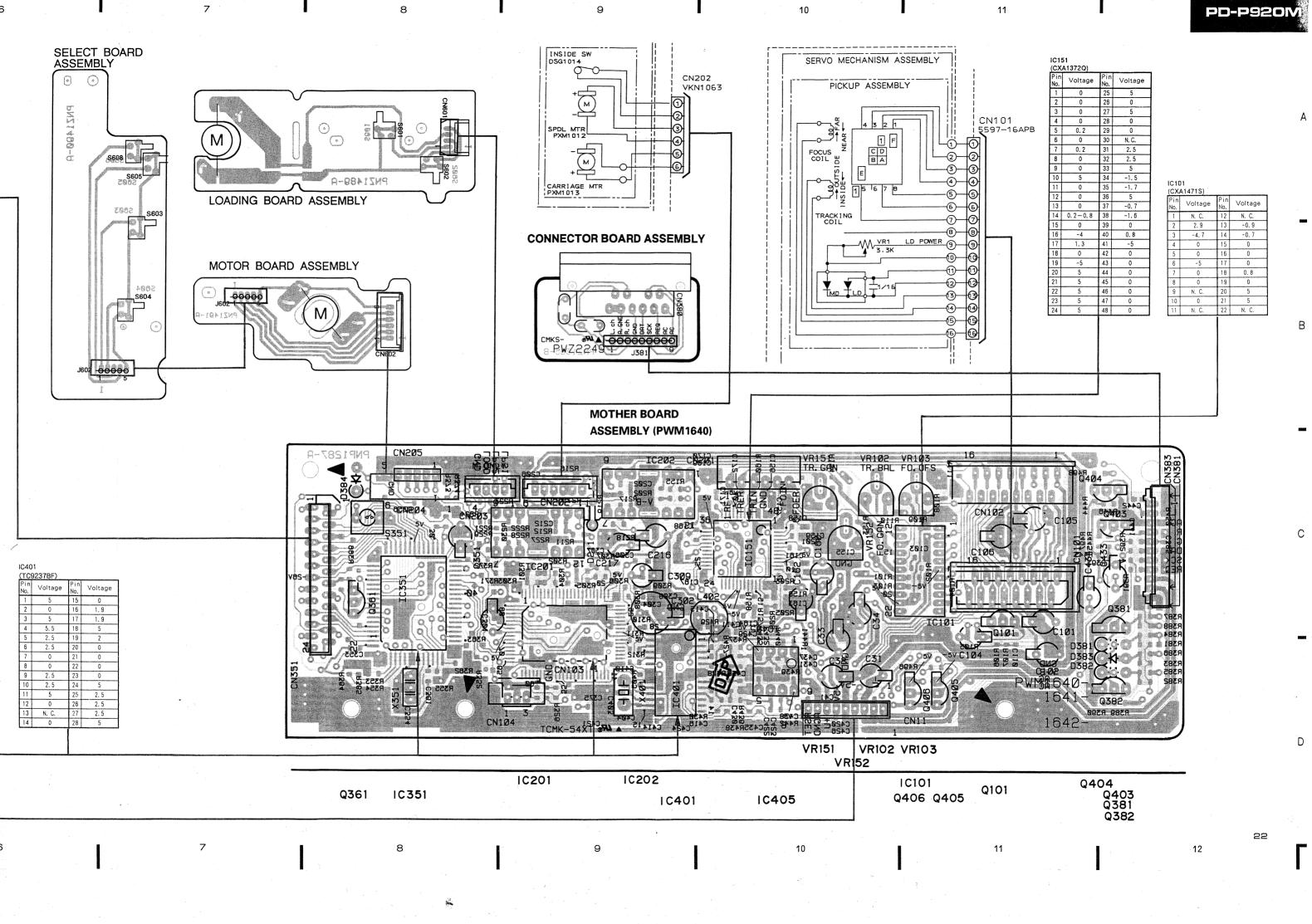
^{3.} The capacitor terminal marked with ____ shows negative terminal.

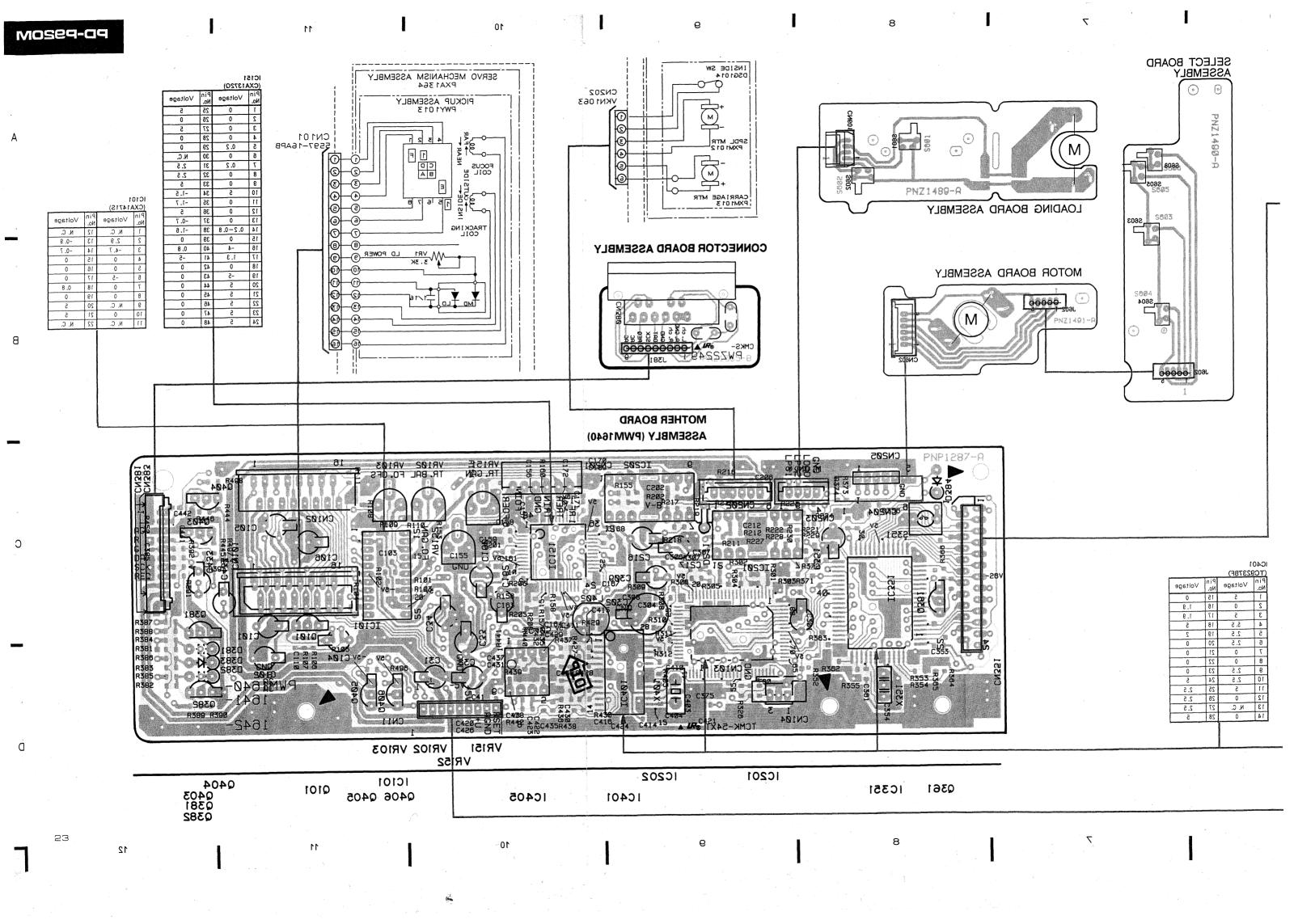
^{4.} The diode marked with O shows cathode side.

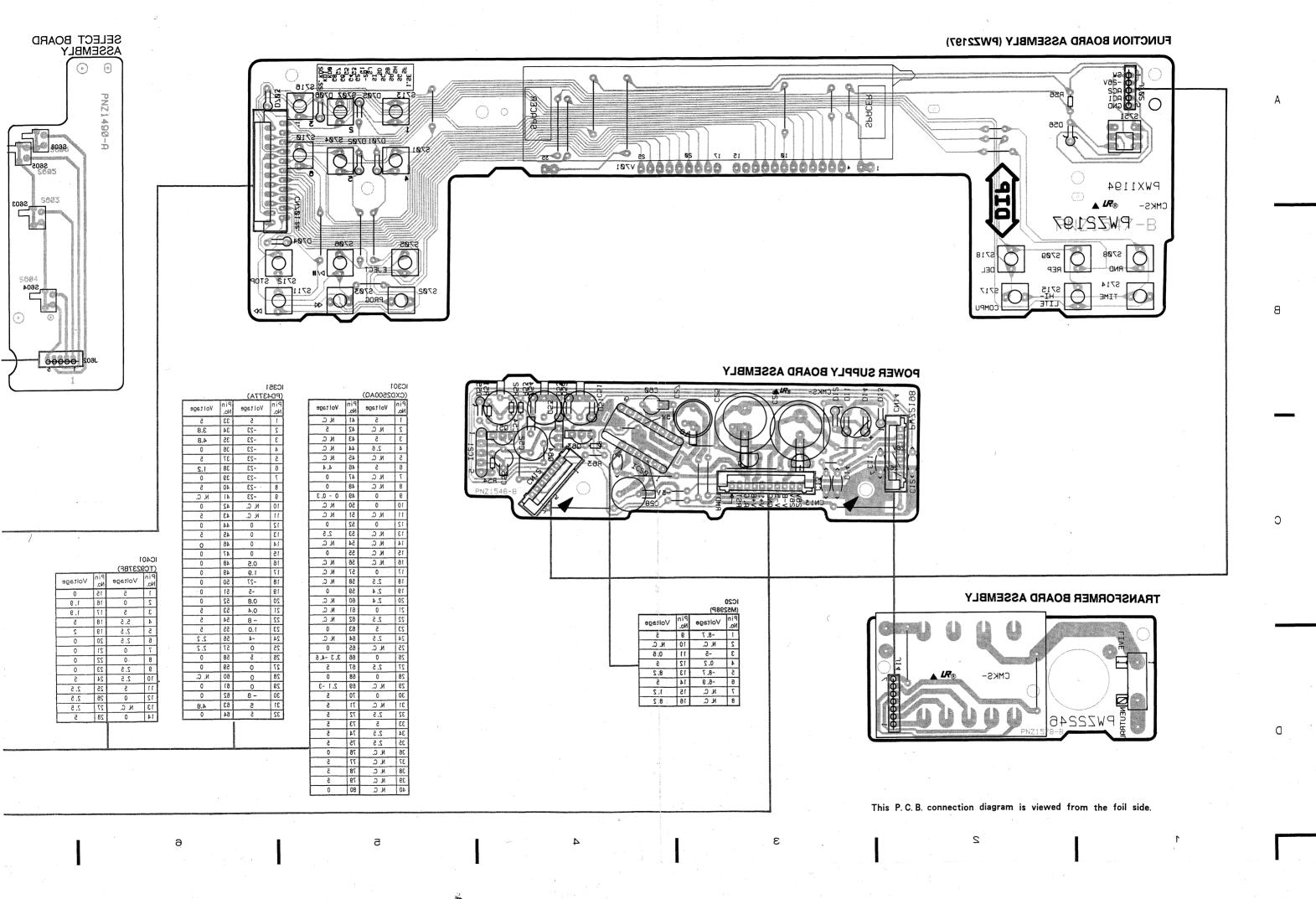
^{5.} The transistor terminal marked with ____ shows emitter.



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# 7. PCB PARTS LIST

# NOTES:

- Part without part number cannot be supplied.
- Parts marked by "®" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The A mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.
  - Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).
  - Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).  $5.62k\Omega \rightarrow 562 \times 10^{1} \rightarrow 561...$  RN1/4SR  $\odot$   $\odot$   $\odot$   $\odot$   $\odot$   $\odot$   $\Box$   $\Box$   $\Box$

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
LIST	OF ASSE	MBLIES	· · · · · · · · · · · · · · · · · · ·		C110	CHIP CAPACITOR	CKSQYF103Z50
		BOARD ASSEMBLY	PWM1640		C155	CERAMIC CAPACITOR	CKSQYB182K50
<b>⊚</b>					C156	CERAMIC CAPACITOR	CKSQYB333K25
		N BOARD ASSEMBLY	PWZ2197	4%	C157	CERAMIC CAPACITOR	CKSQYB103K50
		UPPLY BOARD ASSEMBLY			C158, 159	CHIP CAPACITOR	CKSQYB104K25
	TRANSFO	RMER BOARD ASSEMBLY			•		
	CONNEC	TOR BOARD ASSEMBLY			C160	ELECTROLYTIC CAPACITOR	CEJA4R7M50
		The experience of the first of			C161	CHIP CAPACITOR	CKSQYB104K25
	LOADING	BOARD ASSEMBLY			C162	ELECTR.CAPACITOR	CEJA010M50
	SELECT E	SOARD ASSEMBLY			C163	CHIP CAPACITOR	CKSQYB104K25
	MOTOR E	BOARD ASSEMBLY			C164	CERAMIC CAPACITOR	CKSQYB103K50
<ul><li>M</li></ul>	OTHER B	OARD ASSEMBLY (PV	VM1640)		C167	CERAMIC CAPACITOR	CKSQYB103K50
	CONDUC		•		C168	CERAMIC CAPACITOR	CKSQYB333K25
2EIVII		PRE AMP IC	CXA1471S		C169	CERAMIC CAPACITOR	CKSQYB103K50
	IC101	SERVO IC	CXA1372Q		C170	CERAMIC CAPACITOR	CKSQYB332K50
Δ	IC151	POWER OP-AMP,IC	LA6520		C171, 172	CERAMIC CAPACITOR	CKSQYB472K50
A		EFM DEMODULATION IC	CXD2500AQ				España de la companya del companya del companya de la companya de
	IC301	MICROCOMPUTER,IC	PD4377A		C202	CERAMIC CAPACITOR	CKSQYB103K50
	IC351	MICHOCOMPOTENTO	F D4377A		C206	CERAMIC CAPACITOR	CKSQYB103K50
	10404	8FS DF DA CONVERTER	TC9237BF		C212	CERAMIC CAPACITOR	CKSQYB103K50
	IC401 IC405	OP-AMP IC	NJM4558D		C216, 217	ELECTROLYTIC CAPACITOR	CEJA330M16
•		TRANSISTOR	2SA854S		C301	CHIP CAPACITOR	CKSQYB104K25
	Q101 Q361	TRANSISTOR	2SC1740S				
	Q381, 382	TRANSISTOR	2SC1740S		C302	ELECTROLYTIC CAPACITOR	CEJA330M16
	U361, 362	INANSISTON	20017400		C304	CHIP CAPACITOR	CKSQYB104K25
	0402 404	TDANCICTOD	2SD2144S		C306	CERAMIC CAPACITOR	CKSQYB152K50
	Q405, 404	TRANSISTOR TRANSISTOR	DTC124ES		C307	CHIP CAPACITOR	CKSQYB473K25
	Q405 Q406	TRANSISTOR	DTA124ES		C308	CERAMIC CAPACITOR	CKSQYB103K50
	D211	ZENNER DIODE	MTZJ6.2BX				. gsjálhasgNym
	D211 D381 38		1SS133X		C309	ELECTROLYTIC CAPACITOR	CEJAR47M50
	D361 - 36	SDIODE	1001001		C351	ELECTROLYTIC CAPACITOR	CEJA330M16
SWIT	CH				C353	CHIP CAPACITOR	CKSQYF103Z50
	S351	TACT SWITCH (TEST)	PSG1006		C354	CERAMIC CAPACITOR	CKSQYB103K50
COIL					C361	CHIP CAPACITOR	CKSQYF103Z50
	L402	RADIAL INDUCTOR	LFA010K		C375	CERAMIC CAPACITOR	CKSQYB103K50
CAP	ACITORS				C385	CHIP CAPACITOR	CKSQYB104K25
<b>∵</b> ∩.,	C31, 32	ELECTROLYTIC CAPACITOR	CEJA330M16		C403, 404	CERAMIC CAPACITOR	CCSQCH470J50
	C33, 34	ELECTROLYTIC CAPACITOR	CEJA331M6R3		C410, 411	CHIP CAPACITOR	CKSQYB104K25
	C40	CERAMIC CAPACITOR	CKCYF103Z50		C414 - 416	CHIP CAPACITOR	CKSQYB104K25
	C41	CERAMIC CAPACITOR	CKSQYB103K50		(Alexan)	그 그 시간 그 시간 그리고 있었다.	왕 - 인독화원 교레나
	C101	ELECTROLYTIC CAPACITOR	CEJA331M6R3		C420, 421	CHIP CAPACITOR	CKSQYB473K25
	3101					CHIP CAPACITOR	CKSQYB104K25
		TI TOTOGLETIC CADACITOR	OF 14 404 BA40		C424	CHIP CAPACITOR	CKSQYB473K25
	C102	ELECTROLYTIC CAPACITOR	CEJA101M10		C426	CHIP CAPACITOR	CKSQYB473K25
	C103	CHIP CAPACITOR	CCSQCH180J50			CERAMIC CAPACITOR	CCSQCH560J50
	C104	ELECTROLYTIC CAPACITOR	CEJA101M10		•		



Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	C431_432	CHIP CAPACITOR	CKSQYB104K25	CAPA	CITORS		
		ELECTROLYTIC CAPACITOR	CEJA220M25	0	C11 - 14	CERAMIC CAPACITOR	CKCYF103Z50
	•	B CERAMIC CAPACITOR	CCSQCH390J50		C25	ELECTR.CAPACITOR	CEAS332M16
	C441, 442	CERAMIC CAPACITOR	CKSQYB152K50		C26	ELECTR.CAPACITOR	CEAS222M16
					C27	ELECTROLYTIC CAPACITOR	CEAS471M6R3
RESIS	STORS				C28	ELECTR.CAPACITOR	CEAS101M10
	VR102	VR (22 kΩ)	RCP1046				
	VR103	VR (1 kΩ)	RCP1044		C51, 52	ELECTR.CAPACITOR	CEAS221M25
	VR151, 152	VR (22 kΩ)	RCP1046		C53	ELECTR.CAPACITOR	CEAS101M25
		OTHER RESISTORS	RS1/10S□□□J		C54	ELECTR.CAPACITOR	CEAS101M50
~	-				C55	ELECTR.CAPACITOR	CEAS100M50
THE		OFD AND DECOMPTOD	1/004044		C60	ELECTR.CAPACITOR	CEAS010M50
	X351	CERAMIC RESONATOR	VSS1014 PSS1008	DECI	STORS		
	X401	XTAL RES (OSC)		NESI	SIUNS	ALL RESISTORS	RD1/6PM□□□J
	CN101	CONNECTOR CONNECTOR	5597-16APB			ALL RESISTORS	ND 170F WILLIAM
	CN351	CONNECTOR	HLEM22R-1				
				MOT	OR BOA	RD ASSEMBLY	
OAL	ING BO	ARD ASSEMBLY			There is	not supplied parts in this a	ssembly.
WIT	CHES						•
	S601, 602	PUSH SWITCH	DSG1016	TDAF	VICEUDI.	MER BOARD ASSEMBL	V
		(LOADING POSITION)		INAI			
					There is	not supplied parts in this as	ssembly.
ELE	CT BOAI	RD ASSEMBLY					
WIT	CHES			CON	NECTOR	R BOARD ASSEMBLY	
	S603 - 606	PUSH SWITCH	DSG1016		There is	not supplied parts in this as	ssembly.
		(MAGAZINE, DISC POSITION)			111010 13	not supplied parts in this a	3301110171
	CONDUC.	BOARD ASSEMBLY (F TORS	VVZZ137 j				
	D56	ZENNER DIODE	MTZJ16B				
	D701 - 706	DIODE	1SS254				
AZIT	CHEC						
4411	CHES	TACT CWITCH	DCC1006				
		TACT SWITCH REPEAT, RANDOM PLAY,	PSG1006				
14 15		PGM, PLAY, SEARCH, TIME,					
		SCAN, PROGRAM, PAUSE,		•			
		ECT, DISC NUMBER(1 — 6))					
	S751	PUSH SWITCH (POWER)	PSG1007			in the arms and	
	ASTRIANI Great and a second					ing the second s	
	STOR		g 4				
100	R56	CARBON FILM RESISTOR	RD1/6PM681J				
			**				
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	V701	FL INDICATOR TUBE	PEL1063				
670	CN701						e and the second
							ngs in
O VAZ	ED CLIDE						J#61
		PLY BOARD ASSEMBL				11.20 gartin i nerija i	
		TORS					e de Contra de Composito de la compositorio de la compositorio de la compositorio de la compositorio de la comp
	IC20	REGULATOR IC					
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	U63	TRANSISTOR	DIA124ES		i sa ta Vagoria, a t		
		TRANSISTOR					
	D11 - 14		11ES2				in the state of th
	D51 - 54				a je stojimski sijek	1987 - Charles Control (1987)	
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		The state of the s				<ul><li>一、大学等等等。并不必要的工作等表示。</li></ul>	

# 8. ADJUSTMENTS

# 8.1. Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

# Adjustment Items/Verification Items and Order

Step	Item	Test Point	Adjustment Location
1	Focus offset adjustment	TP1, Pin 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Grating adjustment	TP1, Pin 2 (TRK. ERR)	Grating adjustment slit
3	Tracking error balance adjustment	TP1, Pin 2(TRK. ERR)	VR102(TRK. BAL)
4	Pickup radial/tangential direction tilt adjustment	TP1, Pin 1 (RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
5	RF level adjustment	TP1, Pin 1 (RF)	VR1 (RF level)
6	Focus servo loop gain adjustment	TP1, Pin 5 (FCS. IN) TP1, Pin 6 (FCS. ERR)	VR152(FCS. GAN)
7	Tracking servo loop gain adjustment	TP1, Pin 3 (TRK. IN) TP1, Pin 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Focus error signal verification	TP1, Pin 6 (FCS. ERR)	

### Abbreviation table

FCS. ERR :Focus Error
FCS. OFS :Focus Offset
TRK. ERR :Tracking Error
TRK. BAL :Tracking Balance
FCS GAN :Focus Gain
TRK GAN :Tracking Gain
FCS. IN :Focus In
TRK. IN :Tracking In

# Measuring Instruments and Tools

- 1. Dual trance oscilloscope (10:1 probe)
- 2. Low-frequency oscillator
- 3. Test disc (YEDS-7)
- 4. Low-pass filter (39 k $\Omega$  + 0.001  $\mu$  F)
- 5. Resistor (100 k $\Omega$ )
- 6. Standard tools



# Test Point and Adjustment Variable Resistor Positions

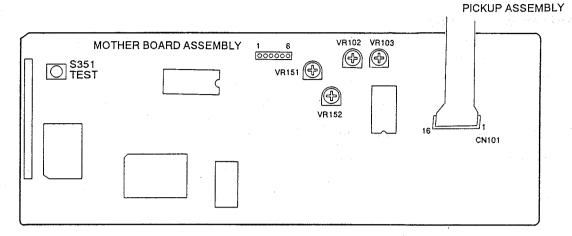


Figure 1 Adjustment Locations

### Notes

- 1. Use a 10:1 probe for the oscilloscope.
- 2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

# Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

## [Setting these models to test mode]

How to set this model into test mode.

- 1. Turn off the power switch.
- 2. Press the TEST mode switch (S351). (See Figure 1.)
- 3. Turn on the power switch.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 - 3.

# [Release from test mode]

Here is the procedure for releasing the test mode:

- 1. Press the STOP key and stop all operations.
- 2. Turn off the power switch on the front panel.

# [Operations of the keys in test mode]

Code	Key Name	Function in Test Mode	Explanation
	PROGRAM	Focus servo close	The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo.  If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised twice and returned to its original position.
⊳/00	PLAY/PAUSE	Spindle servo ON	Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop.  Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed.  If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.
▷/00	PLAY/PAUSE	Tracking servo close/open	Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal.  If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem. This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.

Code	Key Name	Function in Test Mode	Explanation
KX	MANUAL/ TRACK SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
DD / DD	MANUAL/ TRACK SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
	STOP	Stop	Initializes and the disc rotation stops.  The pickup and disc remain where they are when this key is pressed.
_	EJECT	CD magazine eject	Stores Disc 1 in the CD magazine, then ejects the CD magazine. However, even though the CD magazine is ejected, the pickup does not return to the park position. Even if the CD magazine is mounted again, the pickup remains where it is.

Note: When inserting the magazine, disc 1 of the magazine is loaded automatically.



# [How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.

Here is the key operation sequence for playing back a disc in test mode.

PROGRAM

Lights up the laser diode and closes the focus servo.

PLAY/PAUSE ▷ / □□

Starts the spindle motor and closes the spindle servo.

PLAY/PAUSE ▷ / □□

Closes the tracking servo.

(Press the "▷ / □□" key twice.)

Wait at least 2-3 seconds between each of these operations.

# 1. Focus Offset Adjustment

● Objective	Sets the DC offset for the focu	s error amp.	
Symptom when out of adjustment	The model does not focus in a		
Measurement instru- ment connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR)	● Player state	Test mode, stopped (just the Power switch on)
	[Settings] 5 mV/division 10 ms/division DC mode	<ul><li>Adjustment location</li><li>Disc</li></ul>	VR103 (FCS. OFS)  None needed

# [Procedure]

Adjust VR103 (FCS. OFS) so that the DC voltage at TP1, Pin 6 (FCS. ERR) is  $-150 \pm 50$  mV.



# 2. Grating Adjustment

● Objective	To align the tracking error gen	To align the tracking error generation laser beam spots to the optimum angle on the track.			
Symptom when out of adjustment	Play does not start, track search is impossible, tracks are skipped.				
Measurement instru- ment connections	Connect the oscilloscope to TP1, Pin 2(TRK. ERR)via a	Player state	Test mode, focus and spindle servos closed and tracking servo open		
	low pass filter. (See Figure 2)	Adjustment location	Pickup grating adjustment slit		
	[Settings] 50 mV/division 5 ms/division DC mode	● Disc	YEDS-7		

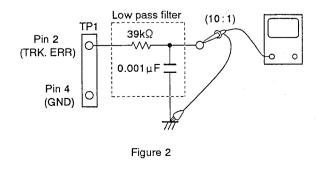
### [Procedure]

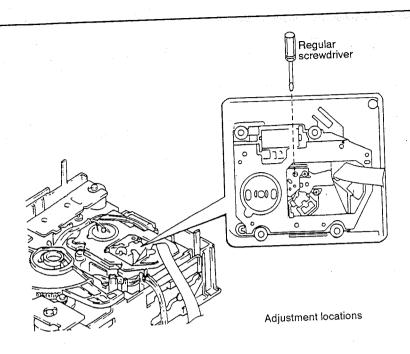
- 1. Move the pickup to midway across the disc (R=35mm) with the MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷ or REV ▷▷ / ▷▷ key.
- 2. Press the PROGRAM key, then the PLAY/PAUSE > / 00 key in that order to close the focus servo then the spindle servo.
- 3. Insert an ordinary screwdriver into the grating adjustment slit and adjust the grating to find the null point. For more details, see the next page.
- 4. If you slowly turn the screwdriver clockwise from the null point, the amplitude of the wave gradually increases, then if you continue turning the screwdriver, the amplitude of the wave becomes smaller again. Turn the screwdriver clockwise from the null point and set the grating to the first point where the wave amplitude reaches its maximum.

  Reference: Figure 3 shows the relation between the angle of the tracking beam with the track and the waveform.

Note

- : The amplitude of the tracking error signal is about 3 Vp-p (when a 39 k $\Omega$  + 0.001  $\mu$ F low pass filter is used). If this amplitude is extremely small (2 Vp-p or less), the objective lens or the pickup malfunction may be the cause. If the difference between the amplitude of the error signal at the innermost edge and outermost edge of the disc is more than 10%, the grating is not adjusted to the optimum point, so adjust it again.
- 5. Return the pickup to more or less midway across the disc with the MANUAL/TRACK SEARCH REV \ < / < \ key, press the PLAY/PAUSE > / 00 key and double check that the track number and elapsed time are displayed on the front panel. If they are not displayed at this time or the elapsed time changes irregularly, double check the null point and adjust the grating again.

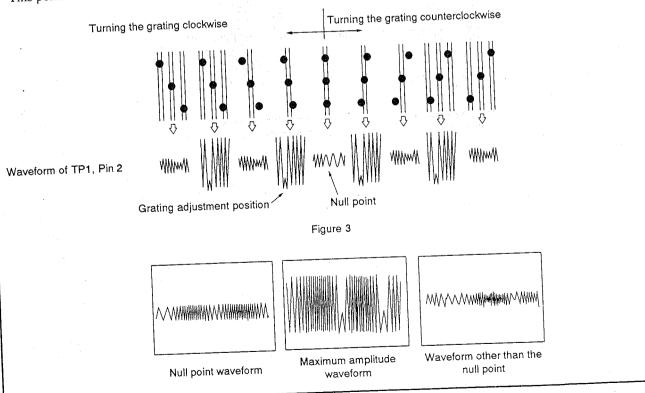




# [How to find the null point]

When you insert the regular screwdriver into the slit for the grating adjustment and change the grating angle, the amplitude of the tracking error signal at TP1, Pin 2 changes. Within the range for the grating, there are five or six locations where the amplitude of the wave reaches a minimum. Of these five or six locations, there is only one at which the envelope of the waveform is smooth. This location is where the three laser beams divided by the grating are all right above the same track. (See Figure 3.)

This point is called the null point. When adjusting the grating, this null point is found and used as the reference position.

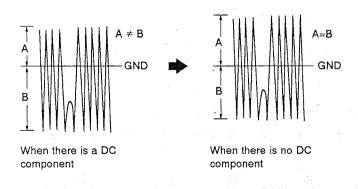




# 3. Tracking Error Balance Adjustment

Objective	To correct for the v	To correct for the variation in the sensitivity of the tracking photodiode.				
Symptom when out of adjustment	Play does not start or track search is impossible.					
Measurement instru- ment connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter.		● Player state  ■ Adjustment location	Test mode, focus and spindle servos closed and tracking servo open  VR102 (TRK. BAL)		
	[Settings] 50 mV/ 5 ms/di DC mo	1.	<b>●</b> Disc	YEDS-7		

- 1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL/TRACK SEARCH FWD  $\triangleright \triangleright / \triangleright \triangleright \mid$  or REV  $\mid \triangleleft \triangleleft | \triangleleft \triangleleft |$  key.
- 2. Press the PROGRAM key, then the PLAY/PAUSE > / [1] key in that order to close the focus servo then the spindle servo.
- 3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
- 4. Adjust VR102 (TRK. BAL) so that the positive amplitude and negative amplitude of the tracking error signal at TP1, Pin 2 (TRK. ERR) are the same (in other words, so that there is no DC component).



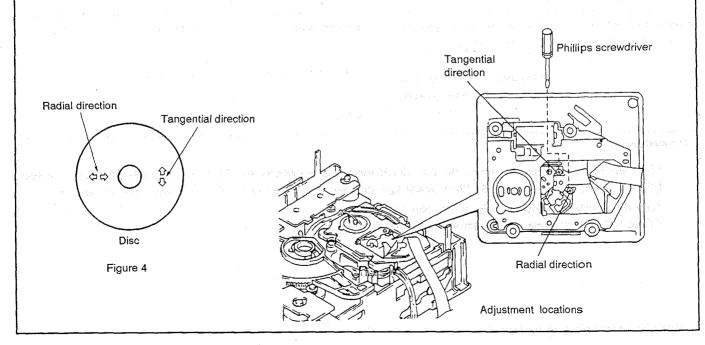
# 4. Pickup Radial/Tangential Tilt Adjustment

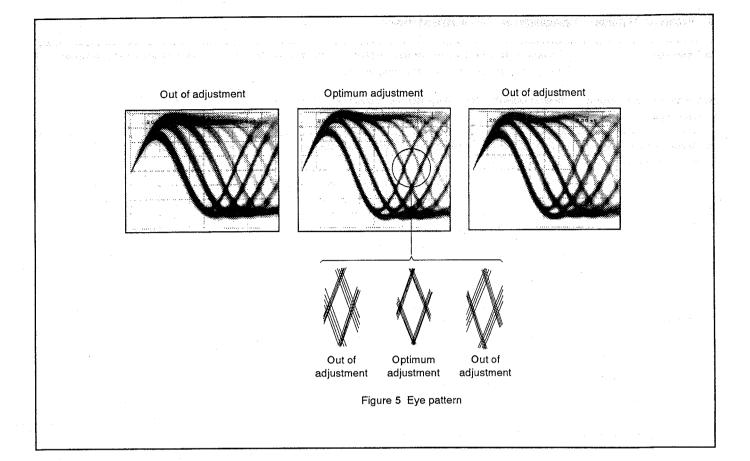
Objective		To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.					
Symptom when out of adjustment	Sound broken; some discs can l	Sound broken; some discs can be played but not others.					
Measurement instru- ment connections	Connect the oscilloscope to TP1, Pin 1 (RF).  [Settings] 20 mV/division 200 ns/division AC mode	<ul><li>Player state</li><li>Adjustment location</li><li>Disc</li></ul>	Test mode, play  Pickup radial tilt adjustment screw and tangential tilt adjustment screw  YEDS-7				

# [Procedure]

- 1. Press the MANUAL/TRACK SEARCH FWD DD/DDI or REV Idd /dd key to move the pickup to halfway across the disc (R=35mm).
  - Press the PROGRAM key, the PLAY/PAUSE  $\triangleright$  / 00 key, then the PLAY/PAUSE  $\triangleright$  / 00 key in that order to close the focus servo then the spindle servo and put the player into play mode. (Press the " $\triangleright$  / 00" key twice.)
- 2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
- 3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 5).
- 4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.

Note: Radial and tangential mean the directions relative to the disc shown in Figure 4.





# 5. RF Level Adjustment

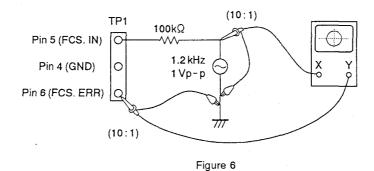
Objective	To optimize the playback RF sig	o optimize the playback RF signal amplitude				
Symptom when out of adjustment	No play or no search	the state of the second second	erromania (n. 1945). Perromania (n. 1946).			
Measurement instru- ment connections	Connect the oscilloscope to TP1, Pin 1 (RF).	● Player state	Test mode, play			
	[Settings] 50 mV/division 10 ms/division	● Adjustment location	VR1(laser power)			
	AC mode	• Disc	YEDS-7			

- 1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷ or REV ⋈ / ◁< key, then press the PROGRAM key, then the PLAY/PAUSE ▷ / □□ key in that order to close the respective servos and put the player into play mode.
- 2. Adjust VR1 (laser power) so that the RF signal amplitude is  $1.2 \text{ Vp-p} \pm 0.1 \text{ V}$ .

# 6. Focus Servo Loop Gain Adjustment

Objective	To optimize the f	To optimize the focus servo loop gain.			n en de Militario	
Symptom when out of adjustment	Playback does no	layback does not start or focus actuator noisy.				
Measurement instru- ment connections	See figure 6. [Settings]	ster of the	Player state	Test mode, play		
	CH1 20 mV/division	CH2 5 mV/division	Adjustment location	VR152 (FCS. GAN)		
	X-Y mode	• Disc		YEDS-7		

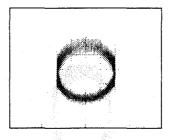
- 1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
- 2. Press the MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷ or REV ▷▷ / ▷▷ or REV ▷▷ / ▷▷ key to move the pickup to halfway across the disc (R=35 mm), then press the PROGRAM key, the PLAY/PAUSE ▷ / □□ key, then the PLAY/PAUSE ▷ / □□ key in that order to close the corresponding servos and put the player into play mode. (Press the "▷ / □□" key twice.)
- 3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.



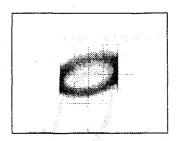
Focus Gain Adjustment



Higher gain



Optimum gain

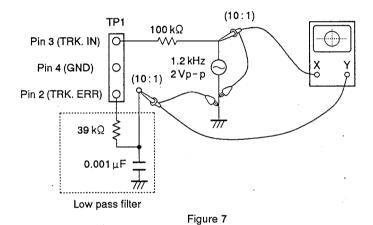


Lower gain

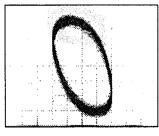
# 7. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loo			*	
Symptom when out of adjustment					
Measurement instru- ment connections	See Figure 7.	Player state	Test mode, play		- 34
	[Settings] CH1 CH2	Adjustment location	VR151 (TRK. GAN)		
	50 mV/division 50 mV/division X-Y mode	● Disc	YEDS-7	·	

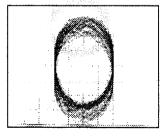
- 1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
- 2. Press the MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷ I or REV I ▷ I or REV I ▷ I or REV I I key to move the pickup to halfway across the disc (R=35 mm), then press the PROGRAM key, the PLAY/PAUSE ▷ / □ I key, then the PLAY/PAUSE ▷ / □ I key in that order to close the corresponding servos and put the player into play mode. (Press the "▷ / □ I key twice.)
- 3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.



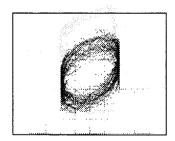
Tracking Gain Adjustment



Higher gain



Optimum gain



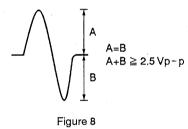
Lower gain

# 8. Focus Error Signal (Focus S Curve) Verification

● Objective	To judge whether the pickup is ok or not by observing the focus error signal. The pickup is judged from the amplitude of the tracking error signal (as discussed in the section on adjusting the tracking error balance) and the waveform for the focus error signal.				
Symptom when out of adjustment					
Measurement instru- ment connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR).		Player state	Test mode, stop	
	[Settings]	100 mV/division	Adjustment location	None	
		5 ms/division DC mode	● Disc	YEDS-7	

# [Procedure]

- 1. Connect TP1 Pin 5 to ground.
- 2. Mount the disc.
- 3. While watching the oscilloscope screen, press the PROGRAM key and observe the waveform in Figure 8 for a moment. Verify that the amplitude is at least 2.5 Vp-p and that the positive and negative amplitude are about equal. Since the waveform is only output for a moment when the PROGRAM key is pressed, press this key over and over until you have checked the waveform.



# [Judging the pickup]

Do not judge the pickup until all the adjustment have been made correctly. In the following cases, there may be something wrong with the pickup.

- 1. The tracking error signal amplitude is extremely small (less than 2 Vp-p).
- 2. The focus error signal amplitude is extremely small (less than 2.5 Vp-p).
- 3. The positive and negative amplitudes of the focus error signal are extremely asymmetrical (2:1 ratio or more).
- 4. The RF signal is too small (less than 0.8 Vp-p) and even if VR1 (laser power) is adjusted, the RF signal can not be brought up to the standard level.



# 8. RÉGLAGES

# 8.1 Méthodes de Réglage

Si le lecteur CD est mal réglé, il risque de ne plus fonctionner normalement, voire ne plus fonctionner du tout, même si le capteur et la circuiterie en présentent aucune anomalie. Par conséquent, ajuster le lecteur correctement en suivant les démarches de réglage.

# ● Points de Réglage/Point et Ordre de Vérification

Etape	Point	Point d'Essai	Emplacement du Réglage
1.	Réglage du décalage de la mise au point	TP1, Broche 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Réglage du réseau de diffraction	TP1, Broche 2(TRK. ERR)	Fente de réglage du réseau de diffraction
3	Réglage d'équilibrage d'erreur d'alignement	TP1, Broche 2(TRK. ERR)	VR102 (TRK. BAL)
4	Réglage d'inclinaison radiale/ tangentielle du capteur	TP1, Broche 1 (RF)	Vis de réglage d'inclinaison radiale, vis de réglage d'inclinaison tangentielle
5	Réglage du niveau RF	TP1, Broche 1 (RF)	VR1 (niveau RF)
6	Réglage de gain de bouncle asservie de la mise au point	TP1, Broche 5 (FCS. IN) TP1, Broche 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Réglage de gain de boucle asservie de l'alignement	TP1, Broche 3 (TRK. IN) TP1, Broche 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Vérification du signal d'erreur de la mise au point	TP1, Broche 6 (FCS. ERR)	

# • Tableau des abbréviations

FCS. ERR : Erreur de mise au point FCS. OFS :Décalage de mise au point TRK. ERR : Erreur d'alignement

TRK. BAL :Équilibrage d'erreur d'alignement FCS GAN :Gain de mise au point TRK GAN :Gain d'alignement FCS. IN :Mise au point correcte

TRK. IN :Alignement correct

# Intruments de Mesure et Outils

- 1. Oscilloscope cathodeique à deux faisceaux (sonde 10 : 1)
- 2. Oscillateur de basse fréquence
- 3. Disque d'essai (YEDS-7)
- 4. Filtre passe-bas (39 k $\Omega$  + 0.001  $\mu$  F)
- 5. Résistance (100 k $\Omega$ )
- 6. Outils conventionnels

# ● Point d'Essai et Positions de Réglage de la Résistance Variable

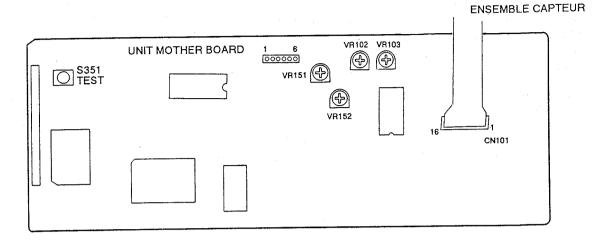


Figure 1 Emplacement des réglages

# Remarques

- 1. Utiliser une sonde 10:1 pour l'oscilloscope.
- 2. Toutes les positions (réglages) des boutons de l'oscilloscope, dans les démarches de réglage, sont conçues pour l'usage d'une sonde 10:1.

# ● Mode d'Essai

Ces modèles sont munis d'un mode d'essai, de façon que les réglages requis à la réparation puissent être effectués aisément. Quand ces modèles sont en mode d'essai, les touches du panneau avant ne fonctionnent pas comme à l'ordinaire. Les réglages et les vérifications peuvent s'effectuer par l'enclenchement de ces touches, à conditions de suivre les démarches requises. Dans le cas de ces modèles, tous les réglages sont réalisés en mode d'essai.

# [Mise en Mode d'Essai]

Voici la menière de mettre le modèle en mode d'essai.

- 1.Commuter l'interrupteur d'alimentation sur arrêt.
- 2. Appuyer sur la touche TEST (S351). (Voir Figure 1.)
- 3. Commuter l'interrupteur d'alimentation sur marche.

Quand le mode d'essai est correctement réglé, l'affichage est différent de celui qui apparaît généralement à la mise souns tension. Si l'affichage reste le même, le mode d'essai n'a pas été réglé correctement. Dans ce cas, répéter les étapes 1 à 3.



## [Lecture de disque en mode d'essai]

En mode d'essai, comme les circuits servo fonctionnent de manière indépendante, la lecture d'un disque exige que les touches soient enclenchées dans l'ordre prescrit, afin de fermer les circuits servo.

Voici l'ordre d'enclenchement des touches pour reproduire un disque en mode d'essai.

PROGRAM

Allume la diode laser ferme le circuit servo de la mise au point.

PLAY/PAUSE ▷ / □□

Démarre le moteur de rotation et ferme le circuit servo de la rotation.

PLAY/PAUSE ▷ / □□

Ferme le circuit servo de l'alignement.

(Appuyer deux fois sur la touche "▷/□□".)

Attendre 2 à 3 secondes entre chaque opération.

# 1. Réglage du Décalage de la Mise au Point

Objectif	Règle le décalage CC de l'amplificateur d'erreur de mise au point.			
Symptôme quand déréglé	Le lecteur ne procède plus à la mise au point et le signal RF n'est pas clair.			
Raccordement des instruments de mesure	broche 6 (FC	,	● Etat du lecteur	Mode d'essai, arrêté (juste l'interrupteur d'alimentation commuté sur marche)
	[Réglages]	5 mV/division 10 ms/division mode CC	● Emplacement du réglage	VR103(FCS. OFS)
			Disque	Aucun requis

# [Marche à suivre]

Ajuster VR103 (FCS. OFS) de façon que la tension à TP1 broche 6 (FCS. ERR) soit  $-150 \pm 50$  mV.

# 2. Réglage du Réseau de Diffraction

Objectif	Pour aligner les points du rayon laser producteur d'erreur d'alignement sur l'angle optimum de la piste.				
Symptôme quand déréglé	La lecture ne commence pas, la re	La lecture ne commence pas, la recherche de piste est impossible, les pistes sont sautées.			
Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK. ERR) via un filtre passe-bas. (Voir Figure 2)  [Réglages] 50 mV/division 5 ms/division mode CC	<ul> <li>Etat du lecteur</li> <li>Emplacement du réglage</li> <li>Disque</li> </ul>	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert.  Fente de réglage du réseau de diffraction du capteur.  YEDS-7		

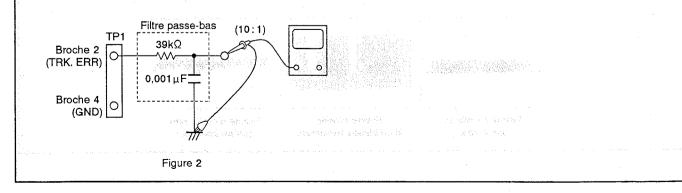
# [Marche à suivre]

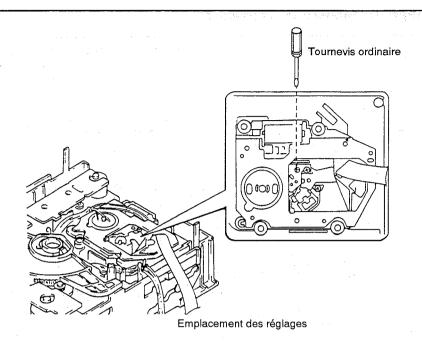
- 1. Déplacer le capteur à mi-chemin sur le disque (R=35 mm) par la touche MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷ ou la touche REV ▷▷ / ▷▷ .
- 2. Appuyer sur la touche PROGRAM, puis sur la touche PLAY/PAUSE > / 00, dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
- 3. Insérer un tournevis ordinaire dans le réseau de diffraction pour trouver le point zéro. Pour plus de détails, voir page suivante.
- 4. Si l'on tourne lentement le tournevis dans le sens des aiguilles d'une montre à partir du point zéro, l'amplitude de l'onde augmente graduellement et si l'on continue à tourner le tournevis, l'amplitude de l'onde diminue de nouveau. Tourner le tournevis dans le sens des aiguilles d'une montre à paritir du point zéro et régler le réseau de diffraction au premier point où l'amplitude de l'onde atteint son maximum.

Référence: La Figure 3 illustre la relation entre l'angle du faisceau de l'alignement et la piste et la forme d'onde.

Remarque: L'amplitude du signal d'erreur d'alignement se situe aux environs de 3 Vc-c (quand un filtre passe-bas de  $39\,\mathrm{k}\,\Omega\pm0.001~\mu\mathrm{F}$  est utilisé). Si cette amplitude est extrêmement petite (2 Vc-c ou moins), il peut s'ensuivre un mauvais fonctionnement de la lentille d'objectif ou du capteur. Si la différence entre l'amplitude du signal d'erreur au bord le plus intérieur et au bord le plus extérieur du disque est supérieure à 10%, ceci signifie que le réseau de diffraction n'est pas réglé à son point optimum. Dans ce cas, recommencer le réglage.

5. Replacer le capteur plus ou moins à mi-chemin sur le disque par la touche MANUAL/TRACK SEARCH REV IN / A ppuyer sur la touche PLAY/PAUSE / III et vérifier que le numéro de piste et la durée écoulée sont affichés sur le panneau avant. Si ces paramètres 'apparaissent pas ce moment, ou que la durée écoulée change de manière irrégulière, vérifier le point zéro et recommencer le réglage du réseau de diffraction.

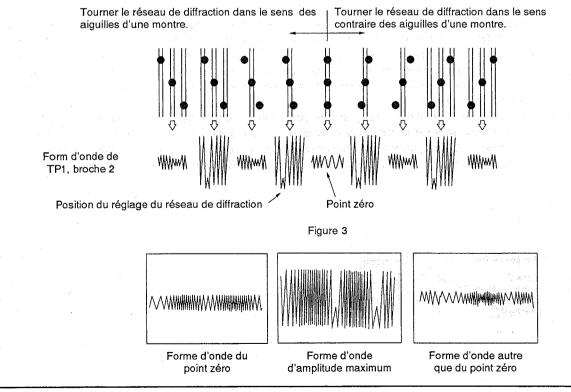




# [Repérage du point zéro]

Quand le tournevis est introduit dans la fente de réglage du réseau de diffraction et que l'angle du réseau de diffraction est modifié, l'amplitude du signal d'erreur d'alignement à TP1, broche 2, change. Dans les limites de la plage du réseau de diffraction, il existe six emplacements où l'amplitude de l'onde atteint le minimum. Mais l'enveloppe de la forme d'onde n'est régulière qu'à un seul de ces emplacements. Ce point se situe à l'endroit où les trois rayons laser, divisés par le réseau de diffraction, se situent exactement sur la même piste (voir Figure 3).

Ce point s'appelle le point zéro. Lors du réglage du réseau de diffraction, ce point zéro est repéré et utilisé comme position de référnce.

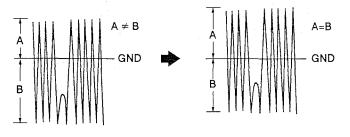


# 3. Réglage d'Équilibrage d'Erreur d'Alignement

Objectif	Pour corriger la variation de sensibilité de la photodiode d'alignement.			
Symptôme quand déréglé	La lecture ne commence pas, la recherche de piste est impossible.			
Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK. ERR). Cette connexion peut être faite par l'intermédiaire d'un filtre passe-bas.		● Etat du lecteur	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert.
	[Réglages]	50 mV/division 5 ms/division mode CC	<ul> <li>Emplacement du réglage</li> </ul>	VR102(TRK. BAL)
			● Disque	YEDS-7

## [Marche à suivre]

- 1. Déplacer le capteur à mi-chemin sur le disque (R=35 mm) par la touche MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷ ou la touche REV I○□ / ○□.
- 2. Appuyer sur la touche PROGRAM, puis sur la touche PLAY/PAUSE > / [10], dans cet ordre, pour fermeer le circuit servo de la mise au point, puis celui de la rotation.
- 3. Aligner la ligne lumineuse (masse) au centre de l'écran de l'oscilloscope et placer celui-ci en mode CC.
- 4. Ajuster VR102 (TRK. BAL) de façon que l'amplitude positive et l'amplitude négative du signal d'erreur d'alignement à TPI, broche 2 (TRK. ERR) soient identiques (c'est-à-dire, qu'il n'y ait aucun composant CC).



S'il y a un composant CC

S'il n'y a pas de composant CC



# 4. Réglage d'Inclinaison Radiale/Tangentielle du Capteur

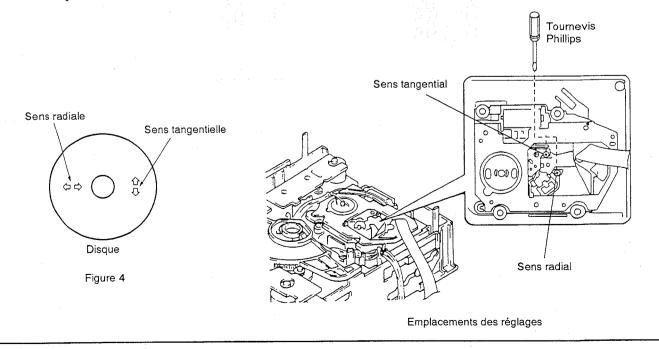
● Objectif		Pour régler l'angle du capteur par rapport au disque, de façon que les rayons laser frappent vericalement le disque et permettre ainsi la lecture optimum des signaux RF.			
<ul> <li>Symptôme quand déréglé</li> </ul>	Son interrompu; certains disques peuvent être lus et pas d'autres.				
Raccordement des instruments de	Raccorder 1 broche 1 (RF)	oscilloscope à TP1,	• Etat du lecteur	Mode d'essai, lecture	
mesure	[Réglages]	20 mV/division 200 ns/division mode CA	Emplacement du réglage	Vis de réglage d'inclinaison radiale. Vis de réglage d'inclinaison tan gentielle.	
			Disque	YEDS-7	

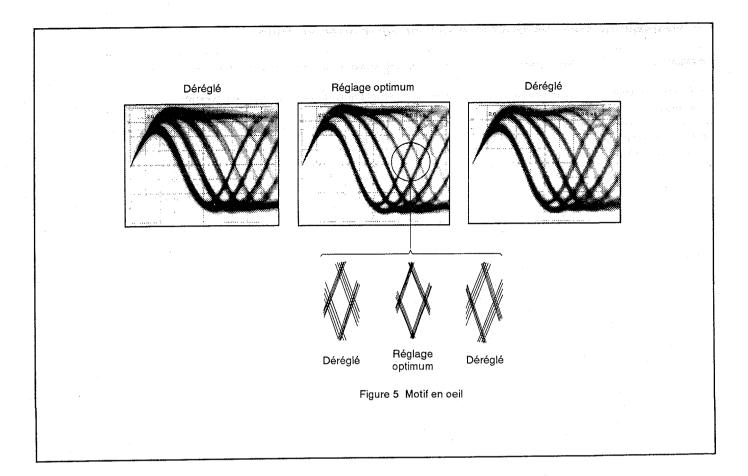
#### [Marche à suivre]

- 1. Dans le cas d'un lecteur multidisque, utiliser la touche MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷ ou la touche REV ▷▷ / ▷▷ ou la touche REV ▷▷ / □□ pour déplacer le capteur à mi-chemin sur le disque (R=35 mm).

  Appuyer sur la touche PROGRAM, PLAY/PAUSE ▷ / □□ et PLAY/PAUSE ▷ / □□ dans cet ordre, afin de fermer le circuit servo de la mise au point, puis celui de la rotation et placer le lecteur en mode de lecture. (Appuyer deux fois sur la touche "▷ / □□".)
- 2. D'abord, ajuster la vis d'inclinaison radiale à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible.
- 3. Ensuite, ajuster la vis d'inclinaison tangentielle à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible (Figure 5).
- 4. Ajuster de nouveau la vis d'inclinaison radiale et la vis d'inclinaison tangentielle de façon que le motif en oeil soit le plus clairement visible. Le cas échéant, régler les deux vis de façon que le motif en oeil soit le plus clairement visible.

Remarque: "Radial" et "tangentiel" se rapportent aux sens par rapport au disque illustré à la Figure 4.





# 5. Réglage du Niveau RF (Niveau RF)

Objectif	Pour optimaliser l'amplitude du sign	Pour optimaliser l'amplitude du signal RF de lecture			
• Symptôme quand déréglé	Pas de lecture ni de recherche				
Raccordement des instruments de	Raccorder l'oscilloscope à TP1, broche 1 (RF).	● Etat du lecteur	Mode d'essai, lecture		
mesure	[Réglages] 50 mV/division 10 ms/division	Emplacement du réglage	VR1 (alimentation du laser)		
	mode CA	Disque	YEDS-7		

## [Marche à suivre]

- 1. Placer le capteur à mi-chemin sur le disque (R=35 mm) à l'aide de la touche MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷ ou la touche REV ▷▷ / ▷▷ ou la touche REV ▷▷ / □□ , dans cet ordre, pour fermer
- les circuits servo respectifs et mettre le lecteur en mode de lecteur.

  2. Ajuster VR1 (alimentation du laser) de façon que l'amplitude du signal RF atteigne 1,2 Vc-c±0,1 V.



# 6. Réglage de Gain de Boucle Asservie de la Mise au Point

Objectif	Pour optimaliser le g	Pour optimaliser le gain de la boucle d'asservissement de la mise au point.			
Symptôme quand déréglé	La lecture ne comme	nce pas ou l'acti	uateur de la mise au po	int est parasité.	
Raccordement des instruments de mesure	Voir Figure 6.  [Réglages]  GAN. 1  20 mV/division  mode X - Y	GAN 2 5mV/division	<ul><li>Etat du lecteur</li><li>Emplacement du réglage</li><li>Disque</li></ul>	Mode d'essai, lecture  VR152 (FCS. GAN)  YEDS-7	

# [Marche à suivre]

- 1. Régler la sortie du générateur AF sur 1,2 kHz et 1 Vc-c.
- 2. Appuyer sur la touche MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷ ou la touche REV □▷ / ▷▷ pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PROGRAM, la touche PLAY/PAUSE ▷ / □□ , puis sur la touche PLAY/PAUSE ▷ / □□ , dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture. (Appuyer deux fois sur la touche "▷ / □□ ".)
- 3. Ajuster VR152 (FCS. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

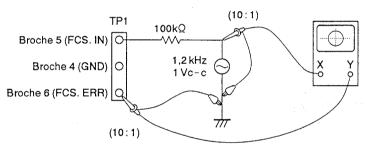
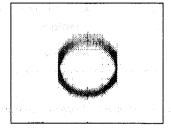


Figure 6

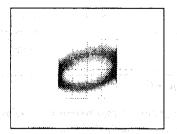
## Réglage de gain de mise au point



Gain supérieur



Gain optimum



Gain inférieur

# 7. Réglage de Gain de Boucle Asservie de l'Alignement

Objectif	Pour optimaliser le	Pour optimaliser le gain de la boucle d'asservissement de l'alignement.			
Symptôme quand déréglé	La lecture ne comi sautées.	La lecture ne commence pas, l'actuateur est parasité pendant la recherche, ou des pistes sont sautées.			
Raccordement des instruments de	Voir Figure 7.		• Etat du lecteur	Mode d'essai, lecture	
mesure	[Réglages] GAN. 1 GAN. 2 50 mV/division 50 mV/division		Emplacement du réglage	VR151 (TRK. GAN)	
	mode X-Y	50 m v/arvision	Disque	YEDS-7	

# [Marche à suivre]

- 1. Régler la sortie du générateur AF sur 1,2 kHz et 2 Vc-c.
- 2. Appuyer sur la touche MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷ ou la touche REV I▷▷ / ▷▷ pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PROGRAM, la touche PLAY/PAUSE ▷ / □□, puis sur la touche PLAY/PAUSE ▷ / □□, dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture. (Appuyer deux fois sur la touche "▷ / □□".)
- 3. Ajuster VR151 (TRK. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

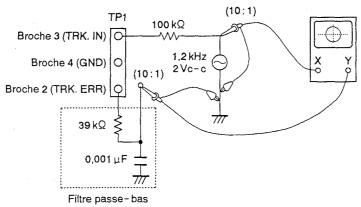
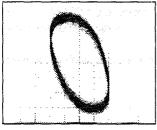
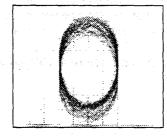


Figure 7

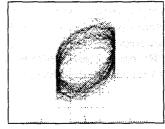
#### Réglage de gain d'alignement



Gain supérieur



Gain optimum



Gain inférieur

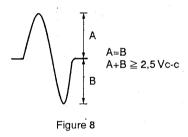


# 

Objectif	Pour juger si le capteur est bon ou pas, en observant le signal d'erreur de la mise au point. L'état du capteur s'évalue à partir de l'amplitude du signal d'erreur d'alignement (comme décrit dans le paragraphe relatif à l'équilibrage d'erreur d'alignement), ainsi qu'à paritir de la forme d'onde du signal d'erreur de mise au point.			
Symptôme quand déréglé			:	
Raccordement des instruments de	Raccorder broche 6 (FO	l'oscilloscope à TP1, CS.ERR).	• Etat du lecteur	Mode de test, arrêt
mesure	[Réglages]	100 mV/division 5 ms/division	Emplacement du réglage	Aucun
		mode CC	Disque	YEDS-7

## [Marche à suivre]

- 1. Raccorder TP1, broche 5 à la masse.
- 2. Installer le disque.
- 3. Tout en regardant l'écran de l'oscilloscope, appuyer sur la touche PROGRAM et observer la forme d'onde de la Figure 8, pendant quelques instants. Vérifier que l'amplitude atteint au moins 2,5 Vc-c et que les amplitudes positive et négatives soient égales. Comme la forme ne sort que pour un moment, quand la touche PROGRAM est enclenchée, appuyer sur à plusieurs reprises sur cette touche, jusqu'à ce que la forme d'onde ait été vérifiée.



#### [Evaluation du capteur]

Ne pas tenter d'évaluer l'état du capteur tant que tous les réglages ne sont pas corrects. Les cas suivants témoignent de l'anomalie du capteur.

- 1. L'amplitude du signal d'erreur d'alignement est extrêmement petite (inférieure à 2 Vc-c).
- 2. L'amplitude du signal d'erreur de mise au point est extrêmement petite (inférieure à 2,5 Vc-c).
- 3. Les amplitudes positive et négative du signal d'erreur de mise au point sont extrêmement asymétriques (taux 2:1 ou plus).
- 4. Le signal RF est trop petit (inférieur à 0,8 Vc-c) et même si VR1 (alimentation du laser) est ajustée, le signal RF ne peut être élevé au niveau standard.

# 8. AJUSTES

# 8.1 Métodos de Ajuste

Si un reproductor de discos compactos se ajusta incorrecta o inadecuadamente, puede funcionar mal o no trabajar incluso aunque no exista ningún problema en el captor ni en los circuitos. Ajuste correctamente siguiendo el procedimiento de ajuste.

# • Ítemes de Ajuste/Verificación y Orden

Paso	Ítem	Punto de Prueba	Lugar de Ajuste
1	Ajuste del descentramiento de enfoque	TP1, Patilla 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Ajuste de retícula	TP1, Patilla 2(TRK. ERR)	Ranura de ajuste de retícula
3	Ajuste del equilibrio de ajuste de seguimiento	TP1, Patilla 2(TRK. ERR)	VR102 (TRK. BAL)
4	Ajuste de la inclinación en sentido radial / tangencial del captor	TP1, Patilla 1 (RF)	Tornillo de ajuste de la inclinación radial. Tornillo de ajuste de la inclinación tangencial
5	Ajuste del nivel de RF	TP1, Patilla 1 (RF)	VR1 (Nivel de RF)
6	Ajuste de la ganancia del bucle del servo de enfoque	TP1, Patilla 5 (FCS. IN) TP1, Patilla 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Ajuste de la ganancia del bucle del servo de seguimiento	TP1, Patilla 3 (TRK. IN) TP1, Patilla 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Verificación de la señal de error de enfoque	TP1, Patilla 6 (FCS. ERR)	

#### • Tabla de abreviaturas

FCS. ERR	:Error de enfoque
FCS. OFS	:Descentramiento de enfoque
TRK. ERR	:Error de seguimiento
TRK. BAL	:Equilibrio de seguimiento
FCS GAN	:Ganacia de enfoque
TRK GAN	:Ganacia de seguimiento
FCS. IN	:Entrada de enfoque
TRK. IN	:Entrada de seguimiento

# Instrumentos y Herramientas de Medición

- 1. Osciloscopio de doble traza (Sonda de 10:1)
- 2. Oscilador de baja frecuencia
- 3. Disco de prueba (YEDS 7)
- 4. Filtro de paso bajo (39 k $\Omega$  + 0,001  $\mu$  F)
- 5. Resistor (100 k $\Omega$ )
- 6. Herramientas estándar

# ● Ubicación de Los Puntos de Prueba y Los Resistores Variables de Ajuste

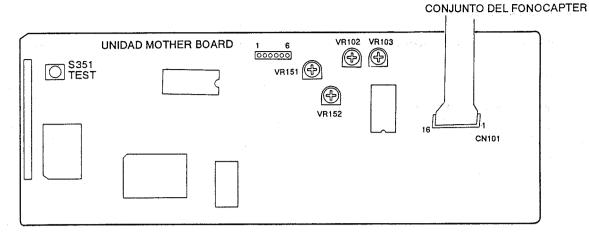


Figura 1 Lugares de ajuste

#### Notas

- 1. Emplee una sonda de 10:1 para el osciloscopio.
- 2. Todas las posiciones de los mandos (ajustes) para el osciloscopio de los procedimientos de ajuste son para cuando se emplee la sonda de 10:1.

#### Modo de Prueba

Estos modelos poseen un modo de prueba que permite realizar fácilmente los ajustes y las comprobaciones requeridos para el servicio. Cuando estos modelos estén en el modo de prueba, las teclas del panel frontal trabajarán de forma diferente a la normal. Los ajustes y las comprobaciones podrán realizarse accionando estas teclas de acuerdo con el procedimiento correcto. Para estos modelos, todos los ajustes se realizarán en el modo de prueba.

#### [Puesta de estos modelos en el modo de prueba]

A continuación se indica cómo poner estos modelos en el modo de prueba.

- 1. Ponga en OFF el interruptor de alimentación.
- 2. Ponga la tecla TEST (S351). (Consulte la figura 1.)
- 3. Ponga en ON el interruptor de alimentación.

Cuando haya ajustado correctamente el modo de prueba, la visualización será diferente a la obtenida normalmente al conectar la alimentación. Si la visualización sigue siento la normal, el modo de prueba no se habrá ajustado normalmente, por lo que tendrá que repetir los pasos 1 a 3.

# [Desactivación del modo de prueba]

A continuación se indica el procedimiento para desactivar el modo de prueba.

1. Presione la tecla STOP y cese todas las operaciones.

2. Ponga en OFF el interruptor de alimentación del panel frontal.

# [Operaciones de teclas en el modo de prueba]

	Nombre de la	Función en el Modo	
Código	Tecla	de Prueba	Explicación
	PROGRAM	Cierre del servo de enfoque	El diodo láser se encenderá y el actuador de enfoque se eleva, después se desciende lentamente, y el servo de enfoque se cerrará en el punto en el que el objetivo se enfoque sobre el disco.  Con el reproductor en este estado, si gira ligeramente con la mano el disco parado, podrá oír el sonido del servo de enfoque.  Si puede oír este sonido, el servo de enfoque estará funcionando correctamente. Si presiona esta tecla sin disco montado, el diodo láser se encenderá, el actuador de enfoque se vera empujado hacia arriba, y después se levantará y descenderá y se eleva dos veces, y volverá a su posición original.
▷/00	PLAY/PAUSE	Activación del servo del eje	Pondrá en marcha el motor del eje haciéndolo girar hacia la derecha y después la rotación del disco alcanzará la velocidad prescrita (unas 500 rpm en la periferia interior), y pondrá el servo del eje en un bucle cerrado.  Tenga cuidado. Si presiona esta tecla cuando no haya disco montado, el motor del eje girará a la velocidad máxima.  Si el servo de enfoque no pasa correctamente a un bucle cerrado, o si el haz lasérico incide en la sección del espejo en el la periferia del disco, ocurrirá el mismo síntoma.
▷/□□	PLAY/PAUSE	Apertura/cierre del servo de seguimiento	Si presiona esta tecla cuando el servo de enfoque y el servo del eje están funcionando correctamente en bucles cerrados, el servo de seguimiento se pondrá en bucle cerrado, en el panel frontal se visualizarán el número de canción que esté reproduciéndose y el tiempo transcurrido, y se producirá la salida de la señal de reproducción. Si el tiempo transcurrido no se visualiza o no se cuenta correctamente, o si el sonido no se reproduce correctamente, es posible que el rayo lasérico esté incidiendo en la sección sin sonido grabado en el borde exterior del disco, o que exista algún otro problema. Esta tecla es basculante de acción alternativa, y abre/cierra el servo de seguimiento alternativamente. Esta tecla no funcionará cuando no haya disco montado.

Código	Nombre de la Tecla	Función en el Modo de Prueba	Explicación
XX XX	MANUAL/ TRACK SEARCH REV	Retroceso del carro (hacia adentro)	Moverá la posición del captor hacia el diámetro interior del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
∆ / ⊠	MANUAL/ TRACK SEARCH FWD	Avance del carro (hacia afuera)	Moverá la posición del captor hacia la periferia del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
	STOP	Parada	Inicializa y se para la rotacion del desco. El captor y el disco permanecen donde están cuando se presiona esta tecla.
	EJECT	Expulsión del cargador de discos compactos	Almacenará el disco 1 en el cargador de discos compactos, y después expulsará dicho cargador. Sin embargo, aunque el cargador de discos compactos sea expulsado, el captor no volverá a su posición de reposo. Aunque vuelva a montar el cargador de discos compactos, el captor permanecerá donde estaba.

Nota : Cuando inserte el cargador, el disco 1 del mismo se cargará automáticamente.



## 2. Ajuste de Retícula

● Objetivo	Alineación de los puntos del haz lasárico de generación de error de seguimiento al ángulo óptimo en la pista.							
Síntomas en caso de desajuste	La reproducción no se inicia, la búsque	a reproducción no se inicia, la búsqueda de canciones es imposible, las pistas se saltan.						
Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla2 (TRK. ERR)a través de un filtro de paso bajo. (Consulte la figura 2)		Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto.  Ranura de ajuste de retícula del captor					
	[Ajustes] 50 mV/división 5 ms/división modo de CC	● Disco	YEDS-7					

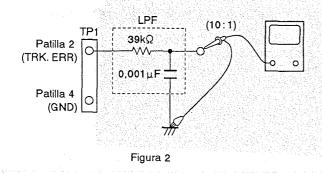
#### [Procedimiento]

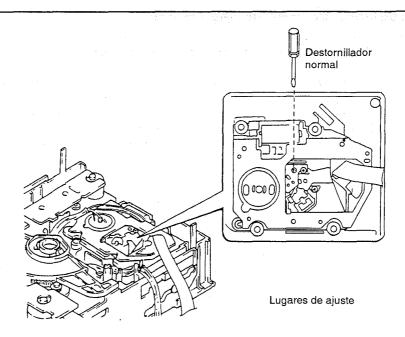
- 2. Presione la tecla PROGRAM, y después la tecla PLAY/PAUSE  $\triangleright$  /  $\square$  , por este orden, a fin de cerrar el servo de enfoque y
- 3. Inserte un destornillador normal en la ranura de ajuste de la retícula y ajuste la retícula hasta encontrar el punto nulo. Para más detalles, consulte la página siguiente.
- 4. Si gira lentamente el destornillador hacia la derecha desde el punto nulo, la amplitud de la onda aumentará gradualmente. Después, si continúa girando el destornillador, la amplitud de la onda se volverá otra vez más pequeña. Gire el distornillador hacia la derecha desde el punto nulo y ajuste la retícula al primer punto en el que la amplitud de la onda alcance su valor máximo.

**Referencia**: En la figura 3 se muestra la relación entre el ángulo del haz de seguimiento con la pista y la forma de onda.

Nota

- : La amplitud de la señal de error de seguimiento será de aproximadamente 3 Vp-p (cuando se emplee un filtro de paso bajo de  $39 \text{ k}\Omega$ ,  $0,001 \,\mu\text{ F}$ ). Si la amplitud está extremadamente pequeña (2 Vp-p ó menos), la causa será el funcionamiento malo en el lente objetivo o en el captador. Si la diferencia entre la amplitud de la señal de error en el borde interior y exterior del disco es superior al 10%, la retícula no estará ajustada al punto óptimo, por lo que tendrá que volver a ajustaria.
- 5. Devuelva el captor hasta la mitad más o menos del disco con la tecla MANUAL/TRACK SEARCH REV Mal/ Al, presione la tecla PAUSE II, y vuelva a comprobar si en el panel frontal se visualizan el número de canción y el tiempo transcurrido. Si no se visualizan esta vez, o si el tiempo transcurrido cambia irregularmente, vuelva a comprobar el punto nulo y ajuste otra vez la retícula.

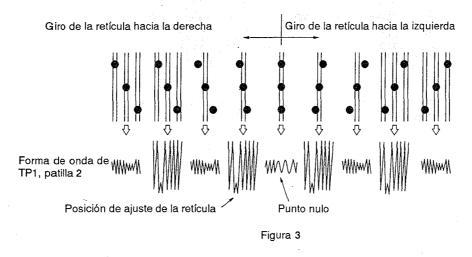




## [Cómo encontrar el punto nulo]

Cuando inserte el destornillador normal en la ranura para el ajuste de la retícula y cambie el ángulo de la misma. La amplitud de la señal de error de seguimiento de TP1, patilla 2, cambiará. Dentro del margen para la retícula existen cinco o seis lugares en los que la amplitud alcanza el valor mínimo. De estos cinco o seis lugares, solamente hay uno en el que la envolvente de la forma de onda es uniforme. Este lugar es donde los tres haces laséricos divididos por la retícula se encuentran exactamente sobre la misma pista. (Consulte la figura 3.)

Este punto se denomina punto nulo. Cuando ajuste la retícula, este punto se encontrará y empleará como posición de referencia.





Forma de onda del punto nulo



Forma de onda de amplitud máxima



Forma de onda que no es el punto nulo

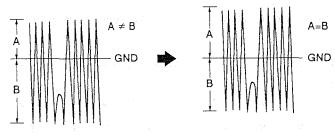


# 3. Ajuste del Equilibrio de Error de Seguimiento

Objetivo	Corrección de la variación de la sensibilidad del fotodiodo de seguimiento.				
Síntomas en caso de desajuste	La reproducción no se inicia o la búsqueda de canciones es imposible.				
Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 2 (TRK. ERR). Esta conexión puede realizarse a través de un filtro de paso bajo	Estado del reproductor	Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto		
	[Ajustes] 50 mV/división 5 ms/división modo de CC	<ul><li>Lugar de ajuste</li><li>Disco</li></ul>	VR102 (TRK. BAL) YEDS-7		

# [Procedimiento]

- 1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷ lo la tecla REV I<< .
- 2. Presione la tecla PROGRAM, y después la tecla PLAY/PAUSE > / [10], por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
- 3. Haga coincidir la línea brillante (masa) del centro de la pantalla del osciloscopio y ponga éste en el modo de CC.
- 4. Ajuste VR102 (TRK. BAL) de forma que la amplitud positiva y la negativa de la señal de error de seguimiento de TP1 patilla 2 (TRK. ERR) sean iguales (en otras palabras, de forma que no haya componente de CC).



Cuando hay componente de CC

Cuando no hay componente de CC

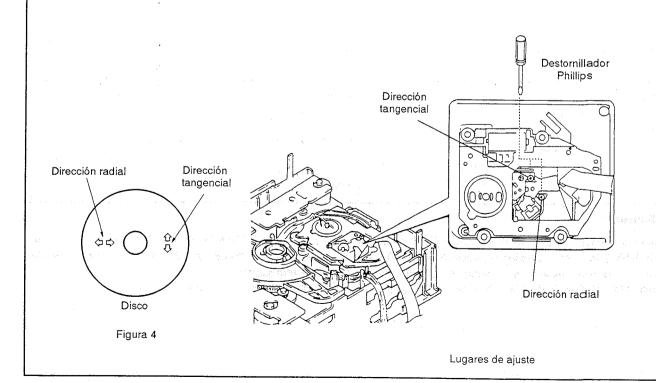
# 4. Ajuste de la Inclinación en Sentido Radial / Tangencial del Captor

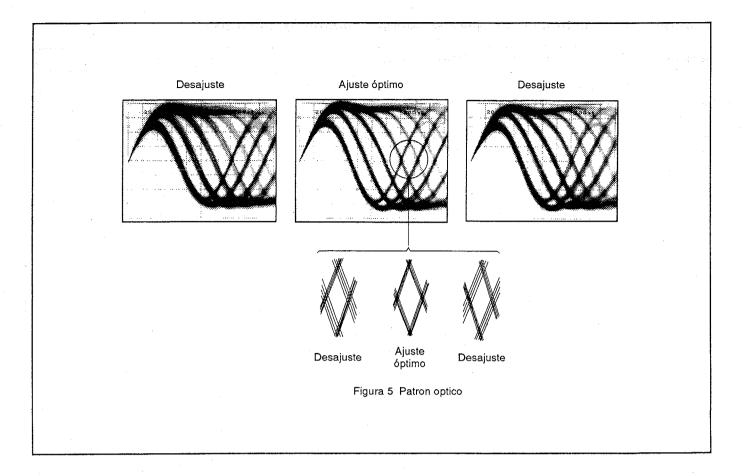
● Objetivo	Ajustar el ángulo del captor en relación con el disco de forma que los haces laséricos incidan perpendicularmente sobre el mismo a fin de poder leer con la mayor exactitud las señales de RF.						
Síntomas en caso de desajuste	Sonido quebrado, algunos discos pueden reproducirse pero otros no.						
<ul> <li>Conexión de los instrumentos de medición</li> </ul>	Conecte el osciloscopio a TP1, patilla 1 (RF).	Estado del reproductor	Modo de prueba, reproducción				
	[Ajustes] 20 mV/división 200 ns/división modo de CA	• Lugar de ajuste	Tornillo de ajuste de la inclinación radial y tornillo de ajuste de la inclinación tangencial				
		• Disco	YEDS-7				

#### [Procedimiento]

- 2. En primer lugar, gire el tornillo de ajuste de inclinación radial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad.
- 3. A continuación, ajuste el tornillo de ajuste de inclinación tangencial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad (figura 5).
- 4. Vuelva a girar el tornillo de ajuste de inclinación radial y el tornillo de inclinación tangencial hasta que el patrón ocular pueda verse con la mayor claridad. Si es necesario, ajuste alternativamente los dos tornillos hasta que el patrón ocular pueda verse con la mayor claridad.

Nota: Radial y tangencial significan las direcciones en relación con el disco mostrado en la figura 4.





# 5. Ajuste del Nivel de RF

<ul><li>Objetivo</li></ul>	Optimización de la amplitud de la señal de RF de reproducción.				
Síntomas en caso de desajuste	La reproducción no se inicia o la búsqueda de canciones es imposible.				
• Conexión de los instrumentos de	Conecte el osciloscopio a TP1, patilla 1 (RF).	<ul><li>Estado del reproductor</li></ul>	Modo de prueba, reproducción		
medición	[Ajustes] 50 mV/división 10 ms/división	● Lugar de ajuste	VRI (potencia de láser)		
	modo de CA	• Disco	YEDS-7		

# [Procedimiento]

- 1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷▮ o la tecla REV ☒◁ / ◁◁, presione la tecla PROGRAM, después la tecla PLAY/PAUSE ▷ / □□, por este orden a fin de cerrar los servos respectivos, y ponga el reproductor en el mode de reproducción.
- 2. Ajuste VR1 (potencia de láser) de forma que la amplitud de la señal de RF sea de  $1,2 \text{ Vp-p} \pm 0,1 \text{ V}$ .

# 6. Ajuste de la Ganancia del Bucle del Servo de Enfoque

● Objetivo	Optimización de la ga	Optimización de la ganancia del bucle del servo de enfoque.					
Síntomas en caso de desajuste	La reproducción no se inicia o el actuador de enfoque produce ruido.						
Conexión de los instrumentos de medición	Consulte la fugura 6.		Estado del reproductor	Modo de prueba, reproducción			
	[Ajustes] CH1	CH2	● Lugar de ajuste	VR152 (FCS. GAN)			
	20 mV/división modo X – Y	5mV/división	● Disco	YEDS-7			

## [Procedimiento]

- 1. Ajuste la salida del generador de AF a 1,2 kHz y 1 Vp-p.
- 2. Presione la tecla MANUAL/TRACK SEARCH FWD ▷ / ▷ o la tecla REV □ ✓ / △ para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla PROGRAM, la tecla PLAY/PAUSE ▷ / □ , y después la tecla PLAY/PAUSE ▷ / □ , por este orden, a fin de cerrar los servos correspondientes y poner el reproductor en el modo de reproducción. (Oprima la tecla "▷ / □ " dos veces.)
- 3. Ajuste VR152 (FCS. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

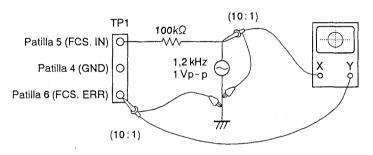
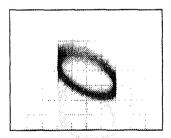
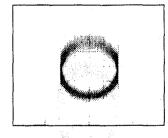


Figura 6

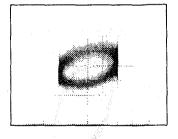
#### Ajuste de la ganancia de enfoque



Ganancia superio



Ganancia óptima



Ganancia inferior

# 7. Ajuste de la Ganancia del Bucle del Servo de Seguimiento

● Objetivo	Optimización de la ganancia del bucle del servo de seguimiento.					
Síntomas en caso de desajuste	La reproducción no se inicia, el actuador de enfoque produce ruido, o se saltan pistas.					
Conexión de los instrumentos de medición	Consulte la figura 7.	Estado del reproductor	Modo de prueba, reproducción			
	[Ajustes] CH1 CH2 50 mV/división 50 mV/división	• Lugar de ajuste	VRI51(TRK. GAN)			
	modo X-Y	• Disco	YEDS-7			

## [Procedimiento]

- 1. Ajuste la salida del generador de AF a 1,2 kHz y 2 Vp-p.
- 2. Presione la tecla MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷ o la tecla REV I▷▷ / △▷ para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla PROGRAM, la tecla PLAY/PAUSE ▷ / □□ , y la tecla PLAY/PAUSE ▷ / □□ , por este orden, a fin de cerrar los servos respectivos y poner el reproductor en el modo de reproducción. (Oprima la tecla "▷ / □□ " dos veces.)
- 3. Ajuste VR151 (TRK. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

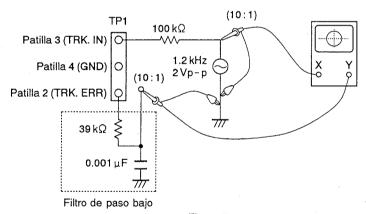
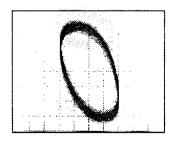
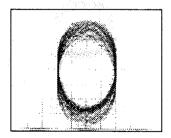


Figura 7

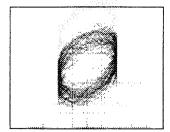
#### Ajuste de la ganancia de seguimiento



Ganancia superior



Ganancia óptima



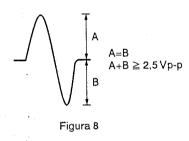
Ganancia inferior

# 8. Verificación de la Señal de Error de Enfoque (Curva S de Enfoque)

● Objetivo	Juzgar si el captor est'a bien o no observando la señal de error de enfoque. El captor se juzga p amplitud de la señal de error de seguimiento (como se ha indicado en la sección sobre el ajust equilibrio de error de seguimiento) y la forma de onda de la señal de error de enfoque.					
<ul> <li>Síntomas en caso de desajuste</li> </ul>						
Conexión de los instrumentos de	Conecte el osciloscopio a TP 6 (FCS. ERR).	• Estado del reproductor	Modo de prueba, parada			
medición	[Ajustes] 100 mV/división 5 ms/división	• Lugar de ajuste	Ninguno			
	modo de CC	• Disco	YEDS-7			

## [Precedimiento]

- 1. Conecte TP1, patilla 5, a masa.
- 2. Coloque el disco.
- 3. Contemplando la pantalla del osciloscopio, presione la tecla PROGRAM y observe durante un momento la forma de onda de la figura 8. Verifique si la amplitud es de 2,5 Vp-p por lo menos y si la amplitud de las partes positiva y negativa son iguales. Como la forma de onda solamente sale durante un momento cuando se presiona la tecla PROGRAM, presione una y otra vez esta tecla hasta que logre comprobar la forma de onda.

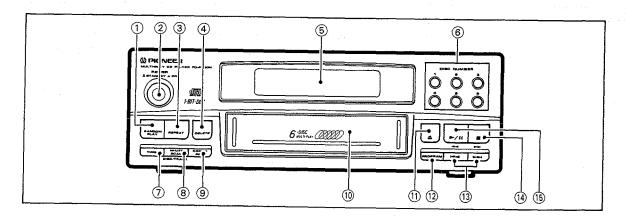


# [Juicio sobre el captor]

No juzgue el captor hasta haber finalizado correctamente todos los ajustes. En los casos siguiented es posible que haya algo erróneo en el captor.

- 1. La amplitud de la señal de error de seguimiento es extremadamente pequeña (menos de 2 Vp-p).
- 2. La amplitud de la señal de error de enfoque es extremadamente pequeña (menos de 2,5 Vp-p).
- 3. Las amplitudes de las partes positiva y negativa de la señal de error de enfoque son extremadamente asimétricas (relación de 2:1 o superior).
- 4. La señal de RF es demasiado pequeña (menos de 0,8 Vp-p) y aunque se ajuste VR1 (potencia de láser), la señal de RF no puede aumentarse hasta el nivel estándar.

# 9. PANEL FACILITIES



## **1 RANDOM PLAY button**

Press to begin random playback.

# 2 POWER switch ( STANDBY/ ON)

Press to turn power to the unit ON and STANDBY.

#### ③ REPEAT button

Press this button for repeat playback. Pressing the button once, twice or three times will change the repeat mode from single track repeat, to all tracks repeat, and repeat playback cancellation respectively.

#### 4 DELETE button

Pressing this button and then selecting the discs with DISC NUMBER buttons (1 through 6) or selecting the tracks with Manual/Track search buttons will result in the selected discs and tracks not being played even when Play/Pause button is pressed.

# (5) Display

#### ⑥ DISC NUMBER buttons (1 ~ 6)

Use to select disc numbers for playback or programming.

#### 7 TIME button

This button selects the display mode of the indicator

When the button is pressed during CD playback, the indication changes from TIME, REMAIN, to TOTAL in that order. (For details concerning the display contents, refer to the explanation about the "DISPLAY SECTION")

#### HI-LITE SCAN (DISC/TRACK) button

**DISC SCAN:** Press this button during stop mode to play back a 10-second passage positioned one minute after the beginning of the first track for each disc contained in the magazine in the order of disc 1 through disc 6.

**TRACK SCAN:** Press the button during DISC SCAN to play back a 10-second passage positioned one minute after the beginning of each track in sequence for each disc contained in the magazine in the order of disc 1 through disc 6.

To reset the starting time of HI-LITE SCAN, press HI-LITE SCAN button during normal playback. This stores the elapsed play time and plays back each of the 10-second passages beginning from the stored time.

# (9) COMPU PGM button

If this button is pressed for A.S.E.S. recording and Manual/Track search buttons are used to designate the length (in minutes) of the recording tape, the CD player will automatically select and program the CD tracks to be recorded. The tracks will be selected for recording so that the empty portion remaining at the end of the tape will be as short as possible. For details regarding this function, consult the operating instructions for the receiver used.

## (10) Magazine insertion slot

#### 11 Eject button ( 📤 )

Press to eject a magazine. When pressed, any magazine inside is expelled forward.

#### (2) PROGRAM button

Use to program a sequence of tracks

- Press this button after selecting a desired disc and track with DISC NUMBER and Track search buttons. Tracks will be added in the order in which they are specified.
- If only a DISC NUMBER button is pressed, all tracks on the specified disc will be added to the program.
   The letters [AL] will be appear on the indicator.

#### Manual/Track search buttons ( | ◄◄ ◄◄, ▶▶ ▶▶ )

To perform track search in normal playback, programmed playback or PAUSE mode.
You can advance to the next track or go back to the previous one by using Manual/Track search buttons.
The fast forward or fast reverse function will be acti-

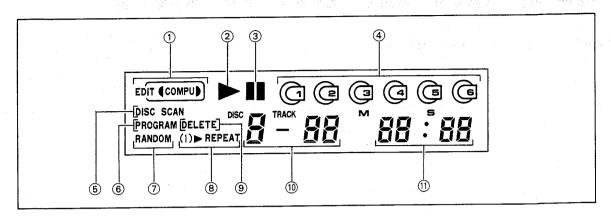
vated by holding down these buttons.

#### Stop button (■)

Press to stop playback. When pressed, the player goes into stop mode and all operations stop.
When pressed during stop mode, the program stored in memory is cleared.

#### 15 Play/Pause button (▶/■)

Playback will begin if this button is pressed when the CD player is stopped or paused. Pressing the button during playback will cause the player to temporarily pause.



#### **DISPLAY SECTION**

- (1) Pressing COMPU PGM button to ON will cause ♠ mark beside the [COMPU] indicator to light.
- Lights during playback.
- (3) Lights during pause mode, when playback is temporarily interrupted.
- (4) If a nonexistent disc is searched for, the corresponding disc symbol will light up.
- The [DISC SCAN] indicator blinks during disc scan and the [SCAN] indicator blinks during track scan.
- 6 Lights after programming (after program has been memorized).
- ① Lights during random playback.
- 8 Lights during repeat playback.
- (9) Lights during the Delete program.
- : Indicates disc number (1 ~ 6) during play-(10) DISC

TRACK: Indicates track number (01~99) during playback or search.

(1) Display change Changes when TIME button is pressed during CD playback.

#### TIME

: Displays the track number of the track being played (TRACK) and the elapsed time (minutes and seconds).

REMAIN: Displays the remaining time of the track being played.

When the TIME button is pressed again, the remaining time on the disc being played will be displayed.

During program play, random play, delete or delete random play operations, the DISC REMAIN display will not be shown. Also, tracks above 24 will not be indicated on the REMAIN display.

TOTAL : Displays the total number of tracks on the disc (TRACK) and the overall playback time of disc will be displayed.

> During playback, the display goes on for about 5 seconds before changing to the TIME display.

> During programmed play, the TOTAL display will indicate the total number of tracks programmed (the total program time will not be displayed).

# 10. SPECIFICATIONS

Typ	e Compact disc digital audio system
Disc	s used Compact disc
Fred	uency response 2 Hz to 20 kHz
Nun	ber of channels 2 channels (stereo)
Dim	ensions 260 (W) × 84 (H) × 281 (D) mm
Wei	ght 3.0 kg
Acc	essories
• ;	Six-compact disc magazine1
	Operating Instructions

#### NOTE:

 The specifications and design of this product are subject to change without notice, due to improvements.



# 11. FOR AD, ABXJS, ABXJ, AEMXJ AND AEMXJS

# **CONTRAST OF MISCELLANEOUS PARTS**

#### NOTES:

• Parts without part number cannot be supplied.

• The △ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

• Parts marked by " • " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

PD-P920M/AD, AEMXJ, AEMXJS, ABXJ, ABXJS and PD-P920M/AUC have the same construction except for the following:

Mark	Symbol & Description	Part No.					Damanka	
		AUC Type	AD Type	AEMXJ Type	AEMXJS Type	ABXJ Type	ABXJS Type	Remarks
	Packing Case	PHG1802	PHG1777	PHG1744	PHG1836	PHG1744	PHG1836	
	Operating instructions (English)		PRB1163	·		PRB1163	PRB1163	
·	Operating instructions (English, French)	PRE1158	*************					
	Operating instructions (Spanish)		PRC1041	•••••				
	Operating instructions (English, French, Dutch, Italian, German, Swedish, Spanish, Portuguese)			PRF1052	PRE1052			